Volume 77 Numbers 1 & 2
January/February 2009

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Amateur Radio

Volume 77, Numbers 1 & 2
January/February 2009

The Journal of the Wireless Institute of Australia
ISSN 0002-6859

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Production Deadlines

General articles, columns and advertising booking 5th day of previous month.
Hamads and advertising material 10th day of previous month

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Our Cover this month

The five antenna solar power array under construction in outback Queensland. See the story starting on page 27. Photo by Don Marshall VK4AMA.

Contributions to Amateur Radio

Amateur Radio is a forum for WIA members' amateur radio experiments, experiences opinions and news. Manuscripts with drawings and/or photos are always welcome and will be considered for publication. Articles on disc or email are especially welcome. The WIA cannot be responsible for loss or damage to any material. A pamphlet, 'How to write for Amateur Radio' is available from the National Office on receipt of a stamped self-addressed envelope.

Back Issues

Back issues are available directly from the WIA National Office (until stocks are exhausted), at $8.00 each (including postage within Australia) to members.

Photostat copies

When back issues are no longer available, photocopies of articles are available to members at $2.50 each (plus an additional $2 for each additional issue in which the article appears).

Disclaimer

The opinions expressed in this publication do not necessarily reflect the official view of the WIA and the WIA cannot be held responsible for incorrect information published.

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Editorial comment

Peter Freeman VK3KAI

Another New Year.....

Some changes are about to happen on the world stage, most notably in the US with the inauguration of Barack Obama as President. I am sure that we will all watch with interest to see the resulting changes.

With the financial melt down that occurred in the second half of 2008, many are forecasting doom and gloom. Some advertisers are saying that they are (or have already) reviewing their plans. For example, Vertex Standard (Australia) has decided to withdraw their display advertising from Amateur Radio. This does not mean that they are going away, simply changing the manner in which they engage with the amateur community.

Of course, another impact has been the changes in the exchange rates between the Australian and US dollars – from a recent peak of around 0.92 around May 2008 to the mid to high 0.60s of recent times – around 0.68 at the time of writing this piece. Depending on how you look at the maths, this means that all things coming from overseas will cost us of the order of 30% more. Many areas of the economy are winding back somewhat, with reports of job vacancies falling significantly and of companies reducing the size of their workforce. It remains to be seen what will be the impact on our hobby – I would imagine that it will depend upon whether or not you are directly impacted!

Over the Christmas and New Year period, I had the chance to catch up with my wider family for a few days. A very relaxing time was one result. The period was largely spent with radio, at least until my return home. Then there was the delight of an Es opening to ZL on 2 m – one ZL in the log and a few that were very marginal that I missed. Such is the nature of Es propagation!

The world above 30 MHz

Many readers are aware that my primary area of interest in our hobby is in "weak signal" propagation on the bands above 30 MHz. I say weak signal, but often signals are extremely strong. Many newcomers to the hobby think that FM and repeaters are terrific on 2 m and 70 cm. I agree – FM mode and the repeater networks provide excellent communication opportunities, further enhanced by EchoLink and IRLP if you have such nodes nearby.

On the other hand, I have heard many Foundation licensees having terrific contacts on 2 m and 70 cm SSB, often working stations several hundred kilometres away under relatively flat conditions. Add to those contacts the delights that come with tropospheric ducting, which is more common at this time of year. Over the past weeks, the appearance of VK7 Foundation licensees on the repeaters in my local area has increased in number and in signal strength. Even greater range would be available if they explored the SSB end of the bands and used horizontally polarised antennas.

For the Advanced and Standard licensees, there are also several microwave bands. One VK2 amateur has been in the local region recently with a work assignment. Being interested in microwave propagation, he brought his 10 GHz system with him. And he had a ball, from all accounts. On one Sunday afternoon, Jack worked several amateurs around Victoria. He has been amazed by the number of amateurs active and/or with equipment in Victoria. I am sure that he will be trying to stir up more interest and activity once he returns to Sydney. Perhaps he may find the time to send us a brief report for this magazine.

Articles and photographs

With the current Field Day season, I hope that amateurs participating have packed the camera as well as the radio gear. We are always in need of good photographs. Brief reports are also welcome, regardless of the nature of your amateur radio activity – Field Day participation, a Club activity or your latest project. Remember that guidelines are available on the Amateur Radio pages on the WIA web site – under the Members area. Of course, longer articles are also welcome – in fact our stock of articles ready for publication is starting to reduce. Get to it folks – tell us about the latest activity!

73 Peter VK3KAI

Michael Owen VK3KI

The increase in examination charges explained

The WIA announced last December new charges for WIA amateur examinations to apply from 2 February 2009. As was said in the release, that date is the anticipated date that the WIA will commence conducting examinations and issuing Certificates of Proficiency in accordance with the proposed new contractual arrangements with ACMA.

The extent of the increase has concerned some people. Others have suggested that the lower fee we are offering to candidates under the age of 18 should also be offered to other groups, for example pensioners or persons holding Senior's cards.

Fee for service

One of the contractual promises made by the WIA in the contract between ACMA and the WIA is that the WIA will charge fees on a cost recovery basis only. That charge must be approved by ACMA as being reasonably related to the costs incurred or to be incurred by the WIA in relation to the matters to which the charge relates. Equally, (subject to some exceptions) the WIA cannot charge less than the cost to it of providing the service.

In short, the WIA must charge a fee for a service that recovers what it costs the WIA to provide the service.

So, as part of our negotiation with ACMA we had to demonstrate what providing the services was costing and would cost.

Determining the cost

Determining the actual cost of providing a service such as the examination service is not all that easy. There are some very easily identifiable costs, such as the cost of paper, postage, envelopes, photocopying and the like. But others are not so easy. For example, salaries are a cost that has to be apportioned. That involves identifying the time taken by tasks associated with the examinations against time allocated to other tasks. And it is not only time in preparing examination packs, and processing them, but also answering questions, telephone calls and the like. So we relied on time sheets for a period to provide a basis for the allocation of time.

Then, there are additional costs arising from the new obligations accepted by the WIA. One is, of course, the cost of the Certificates of Proficiency, as well as the costs arising from the records the WIA is required to keep.

Another of the contractual promises made by the WIA was to take out an insurance policy covering the WIA and each individual Assessor and Learning Facilitator against claims arising from allegedly improper assessments. While it may be hard to identify any substantial monetary loss that would be compensable from such an assessment, the policy does protect Assessors against the real risk of legal costs if an action is instituted. And that premium is another cost.

But let us put all of that into perspective.

What does it mean for candidates?

The WIA was charging candidates less than it cost to conduct the examination system. That meant that the members were paying the difference. The members were subsidising the examination system.

The Board thought that a good case can be made that young people in particular should be encouraged to participate in amateur radio, particularly before making a career choice. The WIA is permitted to make an exception to its obligation to adhere to the cost recovery rules in that case as to do so is consistent with the Australian Government policy on youth training. That is why we are able to avoid any increase (other than a practical assessment taken alone) for candidates under 18 years of age.

The extent of the increase has concerned some people. Others have suggested that the lower fee we are offering to candidates under the age of 18 should also be offered to other groups, for example pensioners or persons holding Seniors' cards.

Because the charges for other candidates have not been increased to cover the shortfall from lower charges for candidates under 18, it is the WIA members who are subsidising those candidates. The Board believes that is entirely consistent with the WIA's objectives.

Even the decision to charge young people a lower amount has attracted some criticism.

Now we have the knowledge

The present examination system only started in late 2005, and obviously at the start we did not really know how much it would actually cost to run. Since then we have built up knowledge and refined the means to record the necessary information.

The WIA has agreed to provide ACMA after each of its financial years its audited financial reports, which must include sufficient information to show the costs incurred by the WIA in providing the services it has agreed to provide as well as details of its income from providing the services.

After the first year the WIA had agreed to provide ACMA with a report to show whether or not its charges do in fact conform to the cost recovery requirements.

The WIA has not resisted these requirements. We believe that they benefit members and candidates and so

continued on page 12

WIA news

Eddie Saunders resigns as a WIA Director

The WIA Board has accepted with regret the resignation of Eddie Saunders VK6ZSE as Director of the WIA.

Eddie advised the Board that he wished to resign for personal reasons.

However, the good news is that Eddie is not walking away from amateur radio. The WIA Directors are very pleased that Eddie will continue as the Western Australian Regional Advisor to the National Technical Advisory Committee, and will continue to run a packet BBS for the Perth area.

He is also looking forward to again becoming involved with his radio club.

The WIA Board thanks Eddie for his contribution to the WIA.

Eddie's term had a further year to run, and so it falls to the WIA Board to appoint a Director for the balance of his term.

WIA Board appoints new Director

The WIA Board has, in accordance with the WIA's Constitution, appointed Bob Bristow VK6POP a Director following the resignation of Eddie Saunders VK6ZSE for personal reasons. Bob's appointment by the Board is for the balance of Eddie's term.

Bob retired from WA Department for Community Development a little over a year ago, after many years in administrative positions. Before that he had worked with young people. He is also involved in Scouting, having been JOTA –JOTI Coordinator for Scouts Australia since 2006.

He has also been a member of the WIA Western Australia Advisory Committee since it was reconstituted in 2007.

He brings to the WIA administrative and financial management skills as well as extensive experience of working with young people, certainly very valuable as the WIA seeks to attract new and younger amateurs.

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WIA Exam Charges to Increase from 2 February 2009

From 2 February 2009, the price of WIA examinations will increase to $67.00 (inc. GST).

However, the WIA Board is very pleased to announce that the price increases will not apply to candidates under the age of 18 on the day of assessment. The charge for these candidates will remain $35 (inc. GST), with the exception of practical assessments taken alone, which will increase from $25 to $35.

The price increases are the result of a number of factors.

The date of the increases (2 February 2009) is the anticipated date that the WIA will commence conducting examinations in accordance with proposed new contractual arrangements with ACMA. From that date, the WIA will be obliged to comply with the Commonwealth's Cost Recovery guidelines, with its charges requiring Commonwealth approval. These guidelines require the WIA to charge a price consistent with the full cost of providing the service. The WIA will subsidise the lower charge for candidates under 18. This is consistent with the Commonwealth's community service obligations.

The work necessary to establish and obtain approval of WIA assessment charges has demonstrated that the WIA is currently undercharging for examination services. A number of new costs have also been incurred. Inflation has added to existing costs. The WIA has taken out a new insurance policy covering the WIA and each individual Assessor against claims arising from alleged improper assessments. There are also additional costs arising from the provision of additional services under the proposed contractual arrangements (such as the issue of amateur Certificates of Proficiency).

WIA costs and corresponding charges have been verified by the WIA's auditors and ACMA.

The WIA is a not-for-profit organisation established to promote amateur radio. The price increases are due entirely to increased costs and the provision of additional services. The larger part of the work associated with the conduct of assessments is still provided on a voluntary basis by people who believe that amateur radio is worth promoting and encouraging. No part of the charges are attributable to the time of WIA Assessors, Learning Facilitators, the WIA Directors, Secretary or the WIA Registered Training Organisation.

ACMA Publishes Revisions to the Radiofrequency Spectrum Plan

On 2nd January 2009, the revised "Australian Radiofrequency Spectrum Plan"(ARSP), was published on the ACMA website. The new ARSP can also be found in the Members Area of the WIA website under Legislation.

The WIA made a submission in respect of the draft ARSP and that can also be found on the WIA website.

This is the first step in authorising access to the new LF band for advanced licence holders. However, until the Amateur Service Licence Condition Determination (Amateur LCD) is amended, amateurs cannot use this new LF band.

The WIA has been assured by ACMA that the first steps in the process to amend the Amateur LCD have been taken, but it will be some months before that process can be completed.

A news release on a commencement date will be published on the WIA website as further information comes to hand.

ar

Building microphone preamplifier circuitry
and making it work properly in an RF 'hot' environment

Felix Scerri VK4FUQ

I am definitely starting to get the impression that that fellow 'Mr Murphy' has a hand in the unpredictable behaviour of RF, when it comes to painful and unwanted interactions with sensitive audio circuitry. A recent construction project, involving an audio preamp in a slightly 'hot' RF environment, has taught me an interesting thing or two about preventing, at times baffling, RF breakthrough problems.

It all began when, needing an additional microphone preamplifier for recording duties, I decided to build a basic, but excellent-quality microphone preamp based on a published design which uses op amps in the active circuitry (see Reference). The circuit also features a balanced input, compatible with my existing home studio dynamic microphones. The preamp was duly built and tested 100% OK, and actually its performance as a microphone preamp was impeccable. However when it was pressed into service working into my main HF rig, a Yaesu FT-900, it was found to be chronically prone to RF breakthrough, despite being housed in a metal box, properly earthed and shielded. Explain that!

This led to a long period of investigation. As expected, it was found that the RF injection was taking place through the balanced microphone cord and the dynamic microphone itself, a fact that I found a little bemusing as in theory anyway, balanced microphone circuitry is supposed to be immune from this sort of problem! Email correspondence with the circuit's designer was somewhat discouraging; when I mentioned that the preamp was being used alongside a HF radio transmitter, I was told that no guarantees of proper operation could be offered. I understood his point perfectly, as proper design of audio gear for use in an even slightly RF 'hot' environment can be problematical to say the least. In any case the preamp worked fine when it was used as a straight microphone preamp for high quality recording purposes; that is, as long as no RF was 'floating' about.

However, as I do not like to admit defeat, I was determined to remedy this unfortunate misbehaviour. One slightly quirky aspect to the situation was that my existing microphone preamp with an unbalanced input, which is also an op amp-based design built some years ago, had absolutely no problems with RF compatibility, despite having no protection from a metal box or shielding of any kind! Why? It was a mystery. For some time I had nasty things to say about the theoretical advantages of so-called balanced circuitry. I was close to conceding defeat, but one evening whilst staring at my existing (working) microphone preamp, praying and hoping for divine inspiration, it suddenly hit me between the eyes; although a detailed technical explanation is possibly a little hazy.

The preamp tested 100% OK. But when it was pressed into service working into my Yaesu FT-900, it was chronically prone to RF breakthrough, despite being housed in a metal box, properly earthed and shielded. Explain that!

When I had built my existing preamp, although using a published design, I added a component not in the original circuit, and that was a resistor to 'terminate' the microphone directly at the preamplifier end of the microphone cable. Although not strictly necessary, I have always believed in doing this for various reasons. It would appear that by resistively terminating the microphone cable with this resistor, the cable is essentially terminated at both ends for RF frequencies as well as audio frequencies. This prevents RF pickup, as well as providing a proper resistive termination for the microphone itself. In past experiments I have always felt, on the basis of actual listening tests, that dynamic microphones always 'sound their best' when loaded in this way. Perhaps this terminating resistor acts in a similar way to a Zobel network, beloved of audio designers.

Well so much for speculation; in any case the use of the terminating resistor obviously worked perfectly in stopping all RF breakthrough quite conclusively. In the case of my latest preamp with a balanced input, and thus enlightened, I soldered a resistor from each balanced microphone connection on the preamp to chassis earth, and all RF problems were instantly solved; very simply, courtesy of two metal film 2.2 k resistors!

During this lengthy investigation process, capacitor bypasses along with ferrite chokes were tried, both singly and in combination, without success. Correspondence with the circuit's designer since this discovery had him agreeing that the use of resistive terminations is an ideal solution and is quite ingenious in preventing unwanted RF breakthrough, although this solution is not widely used, apparently! Whilst there is a slight loss of signal through the terminating resistors, this loss penalty is barely noticeable, and is more than offset by the essentially complete elimination of RF breakthrough. Fun! All courtesy of the interesting manifestations of RF.

Reference:

Elliott Sound Products, "Simple Balanced Microphone Preamp", p.122.
http://sound.westhost.com/project122.htm

ar

A 10 metre FM transceiver

Dale Hughes VK1DSH

10 m FM is an interesting and sometimes exciting band and mode to use. 10 m repeaters usually exist as separate receive and transmit sites, with radio links between the two which can often be accessed with 2 m or 70 cm radios. Also, DX contacts can be had on 10 m via the repeaters; when propagation is good it is possible to work stations across the Pacific Ocean. This article describes a FM transceiver that can be used on the 10 m band.

Frequency modulation and repeaters are usually associated with the VHF and UHF bands and there are repeaters across the country servicing the amateur community. These repeaters extend the range of operation beyond the usual 'line of site' restriction of the VHF and UHF bands. However, Narrow Band Frequency Modulation is allowed as low as 29 MHz and a number of 10 m repeaters also exist. An interesting facet of the 10 m repeaters is that they usually exist as separate receive and transmit sites, with radio links between the two sites. The links can often be accessed with 2 m or 70 cm radios, thus allowing cross-band contacts. Another interesting factor is that DX contacts can be had on 10 m via the repeaters; when propagation is good it is not unusual to be able to work stations across the Pacific Ocean and the islands in between. These aspects of 10 m FM operation make it an interesting and sometimes exciting band and mode to use.

Until recently there were few radios that provided FM operation on 29 MHz, so a common method of getting equipment was to convert CB radios and this enabled many people to get on the air. Another option was to build a transverter or transceiver and this was done by a number of people, although few published designs appear to exist.

This article describes a FM transceiver that can be used on the 10 m band. All of the components can be readily purchased or recovered from surplus two-way radios and no major mechanical work is required to construct the unit. A unique feature of the design is that the transmitter uses digital techniques to generate the modulated carrier signal directly on the output frequency; no multipliers, mixers or analogue modulators are used in the transmitter signal path and this

Figure 1: The completed transceiver – power and aerial connections are on the rear panel of the enclosure.

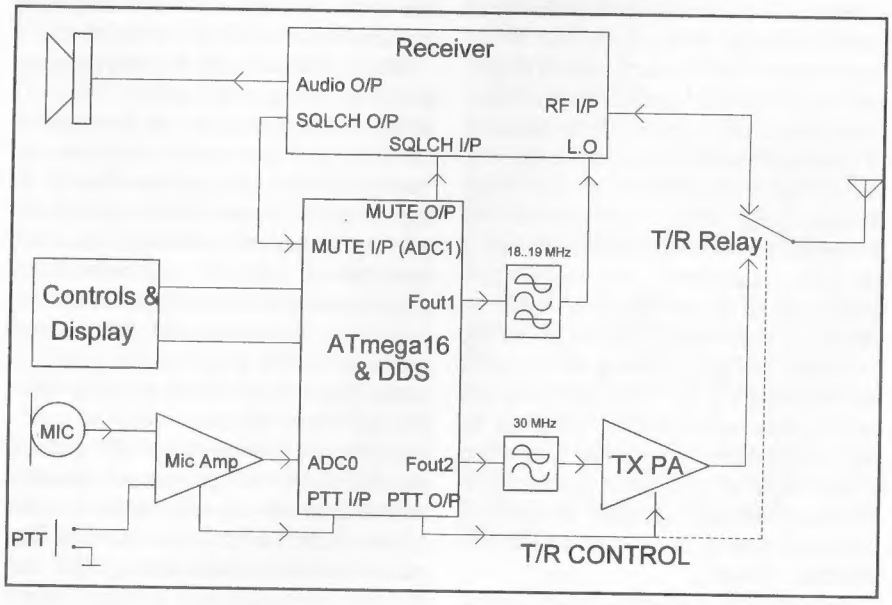

Figure 2: A block diagram of the transceiver.

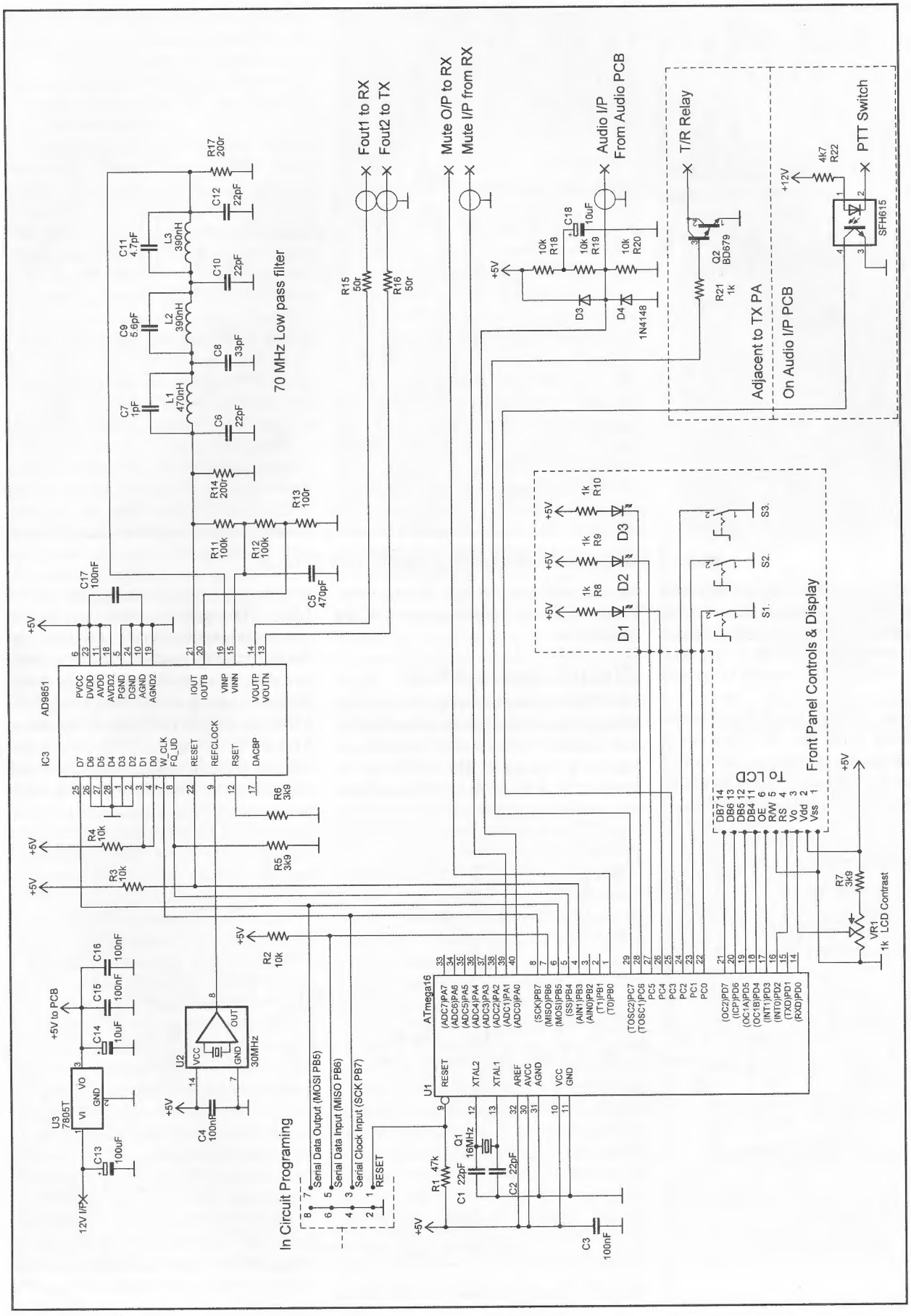

Figure 3: Schematic of the microcontroller and DDS circuit. For clarity the user controls, T/R and PTT interface are shown on the schematic; however they are not located on the DDS circuit board.

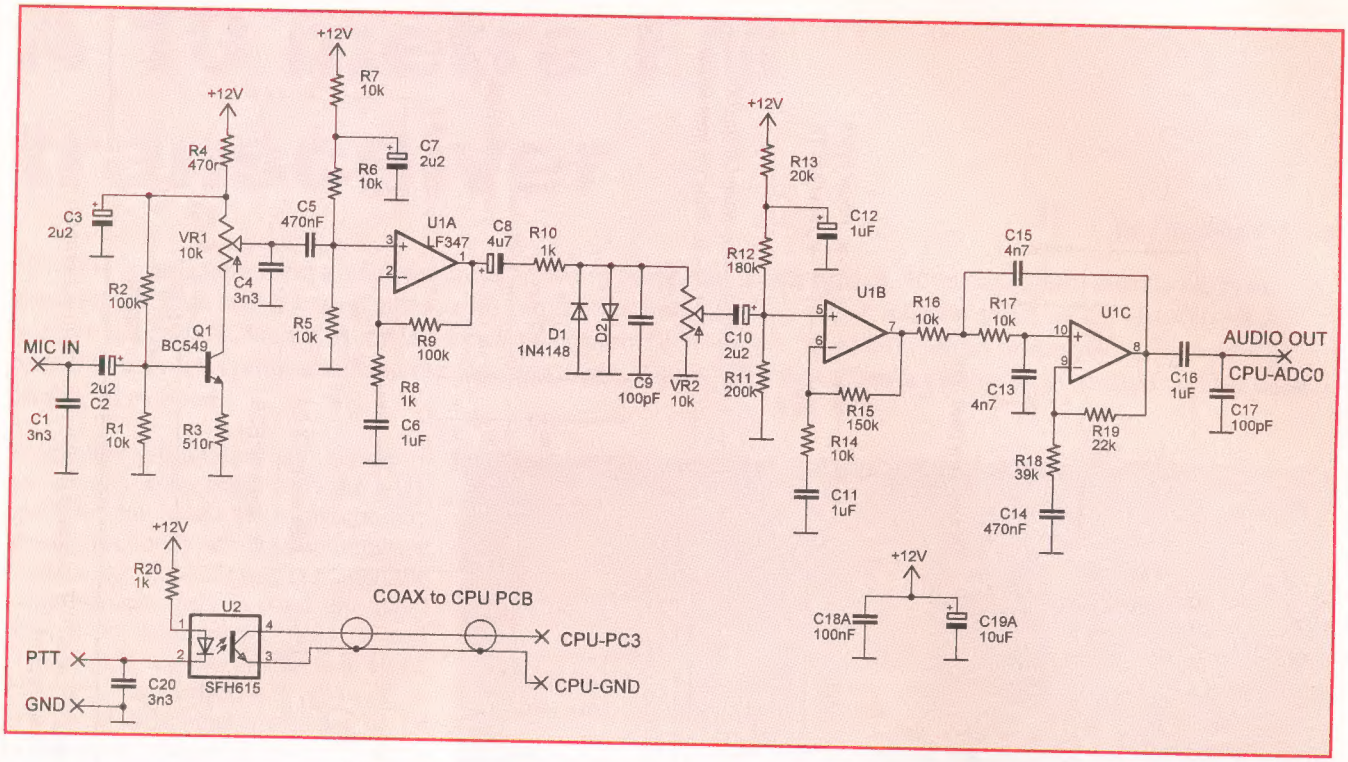

Figure 4: Microphone amplifier, audio processor and PTT circuit.

significantly simplifies construction and alignment of the transmitter. The receiver is a conventional dual conversion design with the first Intermediate Frequency at 10.7 MHz and the second IF at 455 kHz.

The same Direct Digital Synthesiser is used for both the receiver local oscillator and for the transmitter carrier oscillator; its frequency being switched by the microcontroller as required. Figure 2 shows a block diagram of the transceiver.

Circuit description

The DDS unit has been used in a number of projects and has proven to be flexible and reliable. The schematic diagram is shown in Figure 3. The DDS chip is clocked by a 30 MHz crystal oscillator which is internally multiplied to 180 MHz. The operating frequency is set, via a high-speed serial interface, by the ATmega16 microcontroller which calculates the appropriate 'phase word' for the required output frequency. A 70 MHz low-pass filter removes the image frequencies from the DDS output and ensures that the DDS output contains only frequencies below the 90 MHz

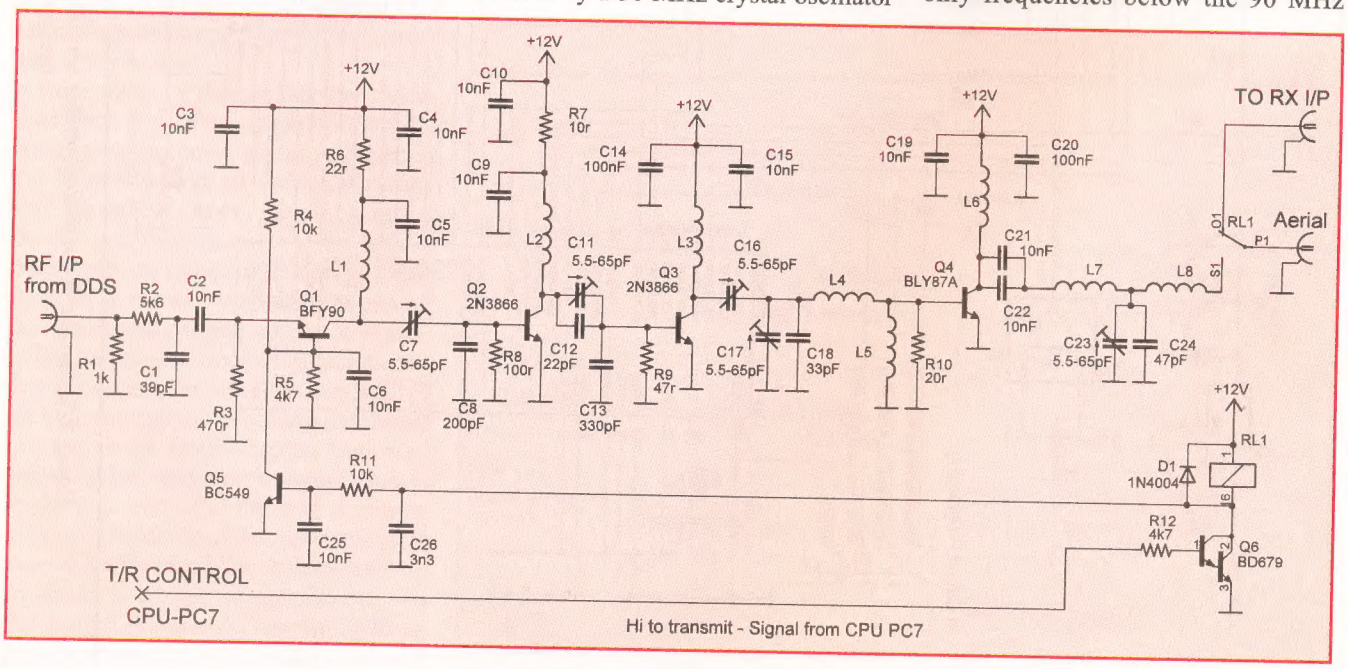

Figure 5: Transmitter power amplifier circuit.

Nyquist limit. The sine wave is then passed to a comparator (internal to the DDS chip) to produce two separate TTL level outputs which are used to provide separate RF feeds to the receiver and transmitter modules.

Modulation of the transmit carrier frequency is done digitally; the voice signal from the microphone is digitised at a 14 kHz rate by a 10 bit Analogue to Digital Converter within the ATmega16 microcontroller and the digitised signal is used to modulate the DDS output frequency. The 14 kHz digitisation rate was the maximum rate at which the ADC would give sufficient resolution and is fast enough to provide a reasonable over-sampling of the band limited (4 kHz) audio input. The ADC is triggered by a hardware counter within the ATmega16 so that the sample rate is fixed and not subject to variations in execution time of the system firmware. The time between samples is sufficient for many CPU instructions and the time used to process each audio sample, generate tones, scan the operator controls, and so on.

The 'no-signal' input to the ADC is held at half scale (~ 2.5 V DC) by a resistor network, and the network also protects the ADC input from overload by means of a diode clamp which keeps the input signal between approximately 0 and 5 volts. The digitised voice signal is processed by the ATmega16 microcontroller and the frequency modulation information is sent to the AD9851 DDS chip as a 4 MHz bit stream which is updated at the 14 kHz sample rate. The operator chooses the transmit frequency by stepping through a range of selected frequencies and the voice signal shifts the carrier frequency above and below the carrier frequency as the voice signal changes. The ATmega16 calculates the frequency deviation so that it is not possible to exceed the bandwidth limitation of 16 kHz (for the band 28.0 to 29.7 MHz) when the microphone ADC limits are reached.

Figure 4 shows the audio processing circuitry. The signal from the microphone is amplified, amplitude limited and filtered before being digitised. This ensures maximum 'talk power' by restricting the dynamic range and bandwidth of the transmitted voice signal. As the limiter clips the voice signal, a low-pass filter is used to remove the higher frequency (above 4 kHz) voice and distortion components and to prevent any problems due to aliasing by the ADC sampling process. Additional signals such as CTCSS tones or a 'roger beep' are added by the microcontroller and can be readily changed in the system firmware.

During development it was found that stray RF energy from the power amplifier overloaded the low-level audio stages, so a number of small value capacitors were added to bypass RF from the sensitive audio stages. The press-to-talk control from the microphone is passed via an opto-coupler to simplify interfacing and reduce the possibility of RF noise pickup.

As the output of the DDS is at the transmit frequency, the signal is passed directly to the first stage of the transmit amplifier via an attenuator and low-pass filter. Figure 5 shows the transmitter amplifier. Bias for the common-base input amplifier is controlled by the Transmit/Receive control line and Q1, the input amplifier, is biased 'on' when in transmit mode and 'off' by Q5 when in receive mode. This ensures that the entire transmitter amplifier chain is completely biased off when in receive mode as no forward bias is provided to subsequent stages. The T/R line also controls the antenna changeover relay. The power amplifier stages are conventional class C amplifiers and the transmitter output is approximately 10 watts when the supply voltage is 13.6 volts. The output transistor (Q4) used in the prototype was a BLY87A device which was obtained from a defunct two-way radio, another suitable device is a 2N5591. The output transistor stud is bolted to the rear panel of the box which acts as a heat sink. A small clip-on heat sink is mounted on the driver transistor (Q3).

When receiving signals, the DDS is set to the correct local oscillator frequency which is the receive signal frequency minus the intermediate frequency: Flo = Fsig – 10.7 MHz. The square wave output from the DDS is then passed through a double-tuned band-pass filter before being passed to the first receiver mixer. The local oscillator amplitude is approximately 5 V pp at the mixer gate. As 10 m repeaters have an input frequency which is 100 kHz below their output frequency, that is, if the repeater input is 29.520 MHz, its output frequency is 29.620 MHz, the receiver

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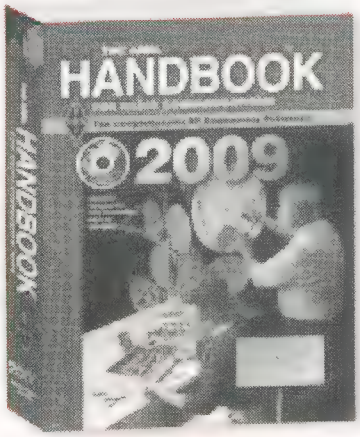

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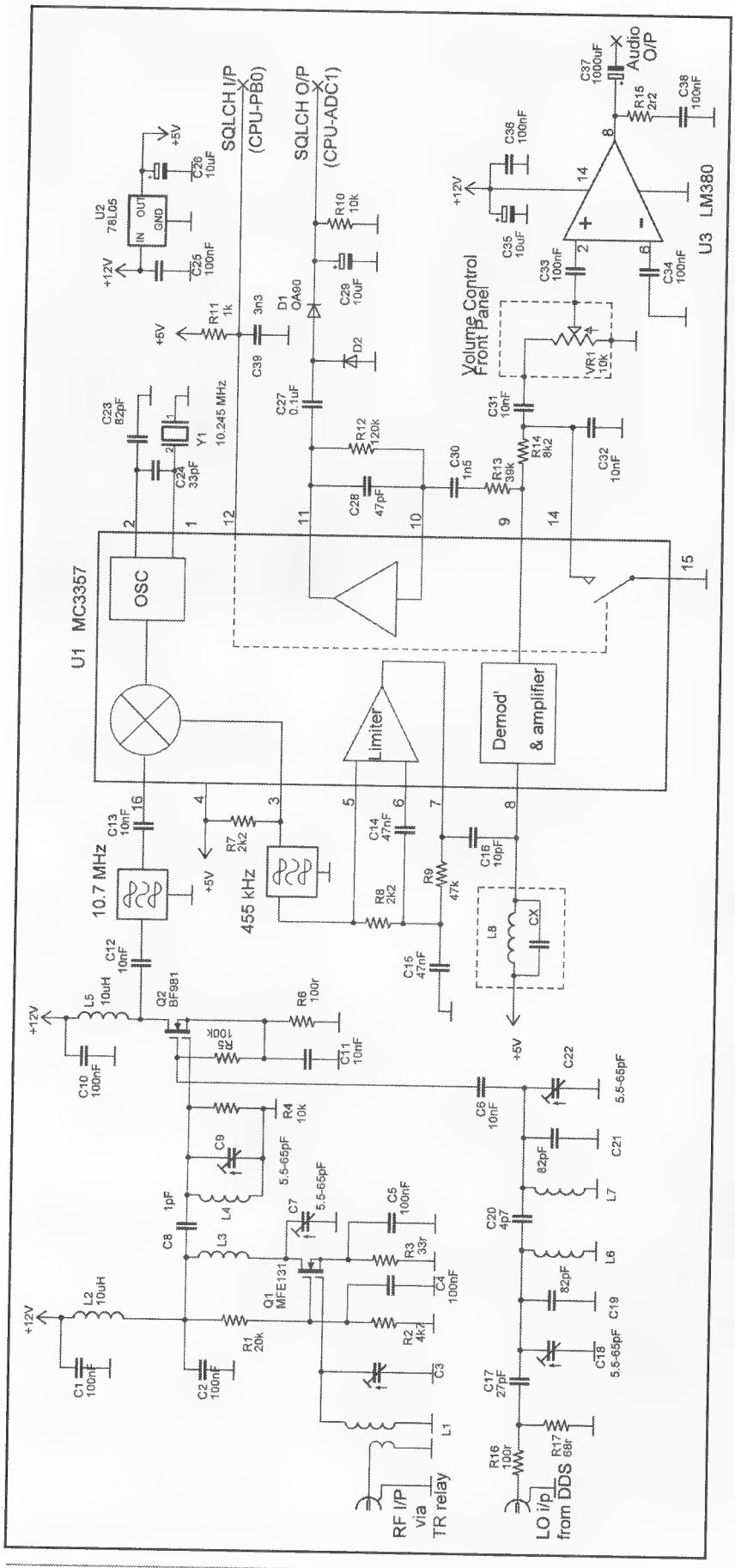

Figure 6: The receiver circuitt

local oscillator can be further offset by 100 kHz when working through a repeater. In this case the transceiver transmits at 29.520 MHz and receives at 29.620 MHz. If required the transceiver can also work with a 'reverse' split by selecting a reverse offset from the user menu.

The receiver (Figure 6) is a conventional dual conversion superhet, with a first IF at 10.7 MHz and a second IF at 455 kHz. The input RF amplifier stage and first mixer use dual-gate MOSFET devices as these were on hand. Other devices can be easily substituted if the specified types are not available. The output from the first mixer then passes through a 10.7 MHz ceramic filter (Murata type SFE10.7) into the MC3357 FM receiver chip which contains the second oscillator (10.245 MHz), mixer, limiter and demodulator. The second IF signal passes through a 455 kHz ceramic band-pass filter (Murata type CFM455D) and is demodulated by a quadrature detector. The tuned circuit in the demodulator is a common 455 kHz IF transformer. Capacitor Cx is internal to the IF transformer and its value depends on the particular transformer used by the constructor.

Following demodulation, the audio signal is filtered and passed to the LM386 audio amplifier via the front panel volume control. A squelch circuit is provided and it operates by sensing the absence or presence of wideband high-frequency noise. When no signal is present, the limiter output consists only of high-frequency noise. When a signal is present in the receiver's pass band, the noise level drops. The MC3357 contains an amplifier that is configured as a high-pass filter and the amplifier output is rectified and passed to the ATmega16 ADC for sensing. When the rectified voltage drops below an adjustable level, the audio output from the detector is un-muted. When no signal is present, the microcontroller mutes the audio by controlling a switch which shunts the signal to earth at a high impedance point in the audio chain prior to the volume control. The user can adjust the mute level via the control buttons on the front panel. The squelch control line also is used to mute the receiver when in the transmit mode.

Overall control of the transceiver is through the three front panel buttons

and a two line liquid crystal display. A simple 'soft' menu is provided in the firmware, the second line of the LCD shows the function of each button for whatever mode of operation is selected. Light Emitting Diodes in the push button switches are used as additional indicators to indicate the selection of various operational modes. The operating frequency can be adjusted in 10 kHz steps and various repeater offsets can be switched on or off. In addition the squelch level can be altered or the squelch can be disabled if required. Entry into the setup menus is allowed by simultaneously pressing several buttons.

Construction and adjustment

The transceiver is housed in a Jaycar diecast box (222 mm x 146 mm x 55 mm, catalogue number HB-5050). The DDS PCB, liquid crystal display, control buttons, audio circuitry and loud-speaker are mounted on the lid of the box. Due to the close proximity of high-speed digital circuitry to low-level analogue circuitry, several layers of screening are required to prevent unwanted RF emissions from the microcontroller and DDS circuitry from being coupled into the receiver circuitry. Un-etched PCB laminate was used in the prototype for screening the various parts of the transceiver. Most signal and control lines are run in miniature screened cables to prevent either pickup or radiation of interference. Building the unit into a larger enclosure would reduce the severity of the problem.

The aerial relay, receiver and transmitter PCBs are mounted on the bottom of the box with screens between the transmitter and receiver. Power to the receiver is passed through a feed-through capacitor and extensive power supply de-coupling is installed on the various PCB assemblies.

The most important adjustment is the audio limiter control (VR2 on the microphone amplifier PCB). It is necessary to ensure that the output level of the transmitter audio circuitry does not exceed ± 2.5 volts with maximum audio input. Exceeding this limit will cause significant distortion of the transmitted audio due to the input voltage range of the ATmega16 ADC being exceeded and the clamping action of the protection diodes. The input gain and clipping controls can be adjusted to give the desired amount of audio limiting when speaking into the microphone and observing the audio signal with an oscilloscope.

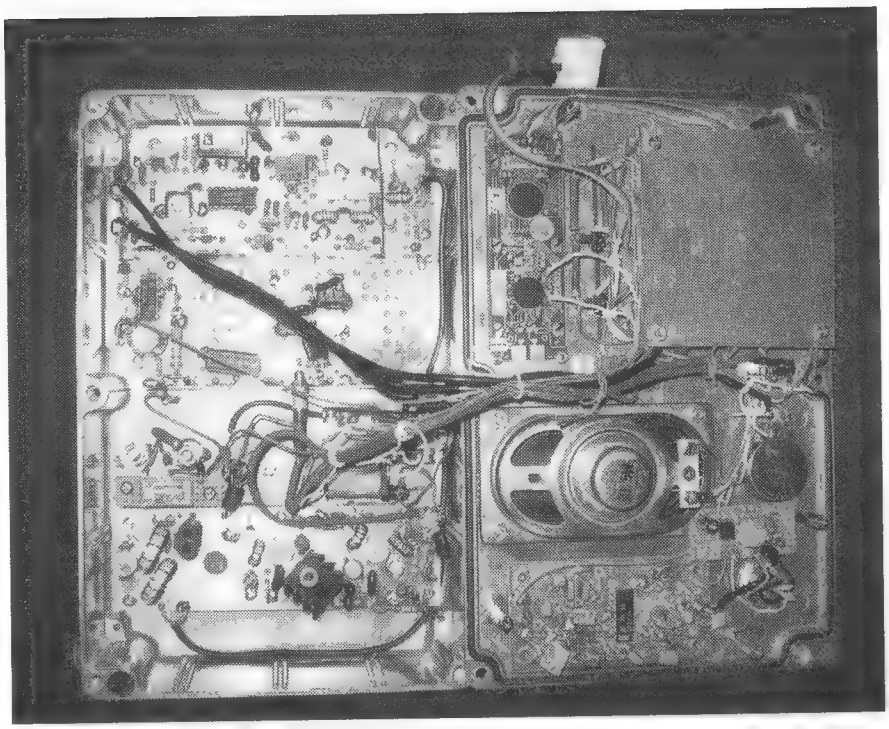

Figure 7: A look inside the 10 metre FM transceiver. The screen that usually covers the circuitry on the right hand side has been removed so that the general construction can be seen. The additional screen on the top right hand side covers the microcontroller and DDS circuitry and is required to reduce RFI from the high-speed digital circuitry. The white connector on the top right hand side is the in-situ programming input for the ATmega16 controller. Two relays can be seen; the left hand relay provides polarity protection for the DC supply input, and the right hand relay is the aerial changeover relay.

Adjustment of the receiver first requires that the band-pass filter on the local oscillator be tuned. This is best done with a high impedance RF voltmeter or an oscilloscope using a 10:1 probe. The oscilloscope should have a bandwidth of at least 20 MHz. The band-pass filter capacitors should be adjusted to give maximum voltage on the gate of the mixer when the receiver is tuned to the middle of the desired tuning range. Following alignment of the local oscillator, the rest of the receiver can be aligned by injecting a signal from a signal generator and adjusting the tuning capacitors for maximum signal strength. The Q of the tuned circuits is such that it is possible to cover the band 29.1 MHz to 29.6 MHz with reasonable sensitivity. The tuned circuit of the quadrature demodulator can be adjusted to give the best quality audio output.

Adjustment of the transmitter requires an iterative approach and the transmitter should be adjusted in the middle of the wanted transmit range with a dummy load on the antenna output. Each of the trimmer capacitors should be adjusted in turn to give maximum output. It may be necessary to repeat the adjustments several times to obtain maximum output. No spurious oscillations or instability was observed in the prototype transmitter; the bandwidth of the transmitter is quite broad and will easily cover the range 29.1 MHz to 29.6 MHz.

Components

It is now becoming more difficult to acquire some once common RF components, however surplus commercial transceivers can be easily obtained and contain many useful parts. IF band-pass filters, transistors, trimmer capacitors and the like can all be obtained and reused in the construction of this 10 m transceiver. The MC3357 was used as it was on-hand. However, it can be replaced by a MC3361 with minor changes and it will provide slightly improved performance. The MC3361, 10.245 MHz crystal and ATmega16 are

available from Futurlec (www.futurlec.com). Other 10.7 MHz and 455 kHz band-pass filters may be substituted according to availability; however the terminating resistors may need to be altered to suit the filters being used. If ex-equipment filters are not available, Barend Hendriksen HF Elektronica BV in the Netherlands (http://www.xs4all.nl/~barendh/Indexeng.htm) has a range of filters, as well as the MC3357, available for purchase.

The AD9851 DDS and 30 MHz crystal oscillator is available from Mini-Kits (www.minikits.com.au). PCB artwork for the DDS circuit board and the system firmware are available from the author. Artwork for the receiver and transmit amplifier is not available, but much of the circuitry can be constructed on Veroboard or by using 'Paddy-board' construction techniques.

There are quite a few inductors to be hand wound and Tables 1 and 2 give the details for the receiver and transmitter inductors. All of the hand wound inductors are wound on Amidon toroids which can be obtained from a number of different suppliers. The RF chokes do not appear to be critical and can be substituted with inductors wound on suitable ferrite cores if necessary.

Conclusion

An FM transceiver for the 10 m band, using a mixture of digital and analogue techniques has been described. The performance of the transceiver is excellent with good receive sensitivity and a high quality transmitted audio. The unit is easy to operate and various functions can be changed by modifying the system firmware. The design represents a first step in progress towards greater use of Digital Signal Processing techniques in RF circuitry using (where possible) low cost and readily available components.

As the DDS usable upper frequency limit is approximately 70 MHz, the circuit could be modified for use on the 6 m band if required. If operation at other frequencies is desired, the matching networks between stages of the transmitter chain will need to be altered. The Motorola application note AN-267 'Matching Network Designs with Computer Solutions' provides tabulated values for matching networks. The tables were used in the design of the 10 m version. The application note is available on the web at http://www.lansdale.com/Articles/an267.pdf as well as at other locations.

Changing the receiver to other frequencies involves changing the signal frequency tuned circuits and local oscillator band pass filter. The required inductance and capacitance can be readily calculated then appropriate toroidal cores selected. The Amidon website https://www.amidoncorp.com/ has datasheets available on their range of toroid cores. The datasheets also give the equations to calculate the number of turns for a given inductance.

I would like to thank Bill Maxwell VK7MX for his careful reading of the manuscript and helpful suggestions.

Inductor	Turns/inductance	Type
L1	3 t primary 18 t secondary	T37-6 toroid
L2	10 uH	Axial inductor
L3	18 t	T37-6 toroid
L4	18 t	T37-6 toroid
L5	10 uH	Axial inductor
L6	10 t	T50-6 toroid
L7	10 t	T50-6 toroid
L8	455 kHz IF transformer	White core

Table 1: Receiver inductors; all wound with 0.5 mm enamelled copper wire.

Inductor	Turns/inductance	Type
L1	15 t	T37-6 toroid
L2	10 t	T37-6 toroid
L3	RFC	6 hole bead
L4	9 t	T37-6 toroid
L5	RFC	6 hole bead
L6	2 t	F14 balun core
L7	9 t	T68-6 toroid
L8	12 t	T68-6 toroid

Table 2: Transmitter amplifier inductors; all wound with 0.63 mm enamelled copper wire.

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The increase in examination charges explained (WIA Comment)

continued from page 3

benefit the WIA. They should provide reassurance for candidates and those training them that the WIA is not taking advantage of its monopoly to provide amateur examinations by imposing charges that produce profits it would not otherwise have and at the same time provide reassurance for its members that their funds are not being unreasonably used to provide a benefit for people who may not be members.

Charge is fair

Frankly, I believe that what we will be charging is what we should be charging, and indeed, what we should have been charging for some time.

The candidates still get the benefit of the many volunteers. Assessors and Learning Facilitators cannot charge for their services. Our RTO does not charge. Think of the cost if all that essential work was a cost that the WIA was bound to recover.

So, the difference between the charges before 2nd February and after that date is not the difference between a high profit and an even higher profit.

It is the difference between the members subsidising an activity and subsidising it to a very much lesser extent.

It is also the difference between being able to say now that we are satisfied that the actual costs we rely on to fix the charges are accurately identified because they have been verified not only by our auditors but also ACMA.

And the WIA's obligations to review and report will hopefully reassure everyone that the WIA is subject to reasonable external monitoring.

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Buying second hand equipment

Jim Linton VK3PC

The cheapest way to get on air is to purchase second-hand equipment – but it can have traps and pitfalls for the unwary. Luckily those selling pre-loved amateur radio equipment are normally honest and reluctant to do the wrong thing to a fellow radio amateur.

However there are a few who misrepresent the equipment and want to rip off unsuspecting buyers. On occasion too there have been fraudsters selling equipment on-line that they did not have in their possession. Their plan is to pocket the money received from several keen buyers.

If this happens to you, seek the advice of your bank or credit card provider – for a fee you will often get the payment reversed, resulting in a partial refund.

Here are a few of the traps:

- Online for sale items sometimes include a photograph – but do not be tricked – it might be an image grabbed somewhere and not actually an image of the item for sale.
- With SWR bridges, RF wattmeters and dummy loads – know their specifications – such as power handling capability and frequency of operation. Will they suit your requirements?
- Transceivers and other equipment can come in various models, make sure you know what you are buying, its age and capabilities – a Google search or a knowledgeable radio amateur will help out here. Ask how old it is, if there are any faults or modifications. Did the seller buy it new? Was it purchased from an authorised manufacturer's agent or bought overseas and imported? This last point is particularly relevant for late model transceivers – it may affect the availability of local service if it needs repair.
- Is the transceiver complete? Does it come with a microphone and power cord? These ancillary items can be costly or difficult to obtain. Is the operator's manual supplied? Again, make sure you know what you are buying – is it a complete, ready to work transceiver or something less?

Good and useful equipment can be obtained second hand – approach this marketplace with knowledge and care for the best result.

Thoughts on second-hand gear

While the price of a basic new transceiver is within the financial reach of many, used equipment can be ideal and if it is wisely bought can provide many years of good service.

An advantage of buying new through an authorised agent or re-seller is that it will come with manufacturer's warranty. Be very careful because it is the practice of some manufacturers to only repair those transceivers sold through its dealer network.

When buying second-hand some people ask the seller if they have the original receipt or other proof it was purchased through an authorised agent. If the equipment fails and it was not sold by such an agent, then repairs to it may present a problem.

For example it was once much cheaper to import an Icom IC-706 transceiver than to buy one locally through an authorised dealer. The volume of these imports being sold in Australia, or personal imports, is attributed to actually driving down the retail price of that popular rig.

The manufacturers know through equipment serial numbers which units were sold through their authorised agents and those that were not. At least one major manufacturer refuses to provide any repair service for the so called grey-market equipment that is imported.

Modern equipment is very reliable and some buy an import at a slightly lower price rather than the factory-backed Australian warranty option, and take the risk.

What to buy?

Let us look at HF transceivers. The new price may be about $1200 and second hand, depending on its age, features and popularity can be $300-$900.

The best advice, just like buying any major consumer item, is to know what is on the market that could suit your needs and finances. Once you have a particular transceiver or a short-list that is the time to start looking.

For a newcomer into amateur radio it can be bewildering to work out what you need, so if you can find an experienced radio amateur or mentor to help all the better. Do check the magazine advertisements and equipment reviews, including user reviews on the eham website www.eham.net or check out the basic information at www.rigpix.com

Reviews of transceivers are published in magazines including the WIA journal *Amateur Radio*, and particularly informative in recent years have been articles on older equipment by Ron Fisher VK3OM.

There are very old transceivers made up to 40 years ago that fall into the 'boat anchor' category because they have vacuum tubes (valves) in the receive and transmit sections. Apart from replacement parts being hard to find, these old rigs do not perform very well, may drift in frequency and lack receiver sensitivity.

One of the joys of amateur radio is the opportunity to operate portable (and mobile), and transporting an old valve rig is not really practical, and might even lead to its failure.

Continuing on the topic of second-hand equipment, after the all-valve transceivers came the hybrids. Most commonly these had solid state receiver and transmitter sections with the exception of the driver and/or power amplifier stages.

A concern associated with hybrids

is the availability of transmitter tubes. While there have been doomsayers claiming these will be unobtainable, that is not the case.

Rigs that fall into the hybrid category include the Yaesu FT-101 series and Kenwood TS-520/820/830 models.

The prices do vary among the hybrids with some of the earlier ones not having the so-called WARC '79 bands of 12 m, 17 m and 30 m, and the 160 m band was also not always provided. Some have AM while others include FM.

While the three WARC bands cannot be used by a Foundation Licensee, they do make the radio a little more attractive when it comes time to sell it later down the track.

Then the all solid state transceivers arrived, such as the Yaesu FT-7, FT-707, FT-77 and Kenwood TS-120/130.

In 1982 the TS-930S became the first solid state HF transceiver with a built-in antenna tuner, and in 1989 digital signal processing arrived in the TS-950SD. In 1993 Kenwood released the TS-50S, the first compact 100 watt HF radio.

The competition between the big three - Yaesu, Icom and Kenwood - heated up at this time with each producing feature-packed fully solid-state base and mobile HF rigs. Yaesu produced its FT-100 and the Icom IC-706 was born.

During this period some manufacturers suffered quality control failures such as dry solder joints, phase locked loop failures and digital display malfunctions resulting in warranty work.

So far we have only been talking about 100 watt transceivers. The solid state models are powered by 12 volts DC and most do not have an inbuilt power supply or antenna tuning unit, with those accessories adding to the total cost of setting up a station.

In more recent years manufacturers have produced low power or QRP transceivers such as the multi-band, multimode Yaesu FT-817 and the Icom IC-703. These are not only great for portable use but can be ideal for a Foundation Licensee who is restricted to 10 W power output.

A popular unit in the late 1970s was the Yaesu FT-7, primarily aimed at the mobile market but which became a popular base station for Novice Licensees.

This set in good condition has been selling for around $300, making it an affordable first rig option. It has none of the bells or whistles of more modern transceivers. There was also the FT-7B that gave a higher transmit power output.

Second-hand rigs woes

It is always best is to see the transceiver working, but that is not always possible particularly if buying off the internet.

Some retailers do sell second-hand gear, these may be trade-ins or items held on behalf of someone else for a commission sale. Occasionally retailers offer a short warranty, say a month, or it can be an 'as is' transaction without any comeback.

The most important thing is to know what you are looking for, having done your homework to enable an informed purchase decision.

One consideration can be the equipment's cosmetic condition; look for signs of wear and tear. If it has rust or corrosion it might have been used in a poor environment such as being installed in a boat, or stored inappropriately.

Damaged or missing case screws may mean it has been modified or repaired, and sometimes this work can be of poor quality.

Always give the transceiver and its microphone a light sniff, I will explain why later. To test a transceiver, the minimum you need to do is power it up to make sure it looks (lights up) right, and with a dummy load and an SWR bridge or power meter, measure its output on several bands. Use a short wire antenna for a receiver (not transmit) test too.

An on-air test is always better, but also combine it with a power output measurement. Do all the switches, the frequency display, gain and other controls work?

An operator's manual is essential, even if it is a photocopy or internet download, so you can know how to make the set work.

The ash tray effect

Another problem with second-hand transceivers and power supply equipment is that the previous owner may have been a heavy smoker.

We have all seen those anti-smoking commercials on television and the impact on lungs. Electronic equipment also breathes in nicotine, a toxic oily chemical, and other particles contained in tobacco smoke.

The long-term effect of nicotine on components such as air-spaced capacitors, coils, switches and printed circuit boards is well known and can result in unreliable performance or even equipment failure.

Affected equipment can stink, particularly when it is powered up, and may require extensive cleaning and odour mitigation treatment.

Happy buying!

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Understanding and building the OCF dipole antenna

Ron Bertrand VK2DQ

Want to build a simple, efficient, multiband antenna?

One of the best inexpensive multiband antennas is the off-centre-fed (OCF) dipole. These are wonderfully simple antennas that permit multiband operation with little or no tuning. The OCF dipole does require a balun. In fact the only difficult part of an OCF dipole is the balun and I will be explaining how the balun works and also how you can make your own. We shall see how many choose to either use a 4:1 or 6:1 balun for an OCF dipole. I use an OCF dipole with a 4:1 balun and find it works very well and the 4:1 balun is a bit smaller, lighter and cheaper to construct than a 6:1. However for those who want to construct a 6:1 balun I will explain how that can be done as well. Before we get going let us try and understand what the OCF dipole is all about. It all started with the Windom antenna.

Windom Antenna

The Windom was once a very popular multiband antenna. The antenna is named after its inventor, Loren G. Windom W8GZ, who first published details of his antenna design in 1929. The Windom is just a horizontal half-wave of wire on the lowest frequency of operation. The Windom uses a single wire as the alleged feedline. Instead of being fed in the centre the single wire 'feeder' is attached to the dipole 14% off centre. See Figure 1.

There is no transmission line used on the original Windom. A single wire is attached 14% off the centre of the dipole. This wire feeder is then connected to an antenna tuning unit (ATU). The idea of feeding the half-wave off centre was to find a point where the impedance "is easier for the tuner to cope with" across multiple bands which are related to even harmonic lengths of the dipole. The Windom was an 80-metre antenna. The single wire was thought to have an impedance of 600 ohms against ground.

The logic goes like this: since the centre of a dipole is about 70 ohms and the ends 2-3000 ohms, the theory goes that we should be able to find any impedance between these two extremes along the antenna. The theory is good but we need to translate it into practice. So a point could be found, presumed to be 14% off centre, where the feedpoint impedance was 600 ohms. While the theory might sound good I have some difficulty with this hypothesis. First the feedpoint is not at the antenna. The feedpoint is at the station end of the vertical wire. The so-called feeder of the Windom is a radiator as much as the half-wave top section. The feeder on the original Windom was supposed to come away from the dipole at right angles for at least one half the length of the antenna; in other words, a quarter wave. I am a bit lost regarding the reason for this distance, but I can easily see the Windom as a vertical wire antenna with a large capacitive hat. Still the antenna enjoyed a lot of popularity for many years because it did work with an ATU. It could be tuned on multiple bands.

However, so could almost any bit of wire, if high voltage points were avoided. A high voltage point occurs when the wire length is a half-wave long or multiple thereof; in other words, a high impedance point. Since the feeder wire radiates there will be RF radiation in the shack. With today's concerns about the potential dangers of electromagnetic radiation, this should be avoided. The old-style Windom would not meet our present-day EMR safety requirements if you are using 100 watts or more. Indeed my first introduction to the Windom was at a Jamboree of the Air around 1976. That was the year I received my first RF burn as a direct consequence of placing my forearm close to the "feeder" wire of the Windom while the station was transmitting. While it hurt, I did think it was cool at the time. I felt like I had been initiated to the RF burn club. Such a risk is not acceptable today. RF energy can cause cumulative and permanent damage to tissues of the body.

It is often said about antennas like the Windom that they are "worked against their image in the ground". I think statements like that are most confusing. It conjures up a picture of something actually being in the ground.

A Windom is just a horizontal half-wave without a real transmission line. It is not really a half-wave antenna because its so-called feeder radiates and is, therefore, part of the antenna. Like most antennas, reflection of radiation from the ground modifies the radiation pattern. That is what is meant by "it works against its image".

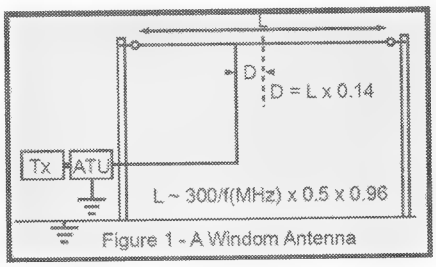

Figure 1: The schematic of a Windom antenna.

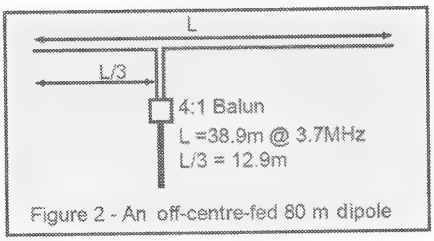

Figure 2: The schematic of an Off-Centre-Fed 80 metre dipole.

So why talk about the Windom if we are not going to rate it well? The principle of finding a point on an antenna where an acceptable or workable impedance match can be obtained across multiple bands is sound. This was the objective with the Windom. Find a point on a dipole that will permit the best multiple-band operation. Did the Windom achieve this? Well, I suppose it did but without an antenna tuner and the more robust transmitter output tuning found in older transmitters you would have trouble with a Windom today.

An improvement on the Windom is the Off-Centre-Fed Dipole or just OCF.

Off-Centre-Fed Dipole

OCFs are a descendant of the Windom. A standard horizontal dipole is fed at a position other than the centre. The objective being to find an impedance on the antenna that can provide a reasonably good match to the transmitter across multiple bands which are even harmonically related, such as 80, 40, 20 and 10 metres. The idea of feeding an antenna off-centre is not new but for some, at least at first, it appears odd. A half-wave antenna is a resonant antenna irrespective of where it is fed. The end of a dipole is 2-3000 ohms and resistive. The centre is about 70 ohms and resistive. Between the centre and the end you could find any resistive impedance between these two extremes (70-3000 ohms).

So, if we wanted to find a point that was 300 ohms and resistive theoretically we could do it. Indeed the idea is not new. For example, delta and gamma matches use this principle. A Quad loop can be fed at the centre of one side (125 ohms) or at a corner (144 ohms) to find an appropriate feedpoint impedance. When we change the feedpoint position on a Quad, we are changing the feedpoint impedance. The resonance and other characteristics of the Quad loop are not substantially changed by the feedpoint we choose. This is how it is with a dipole as well.

How far off-centre?

The exact position off centre seems to vary somewhat and would seem to be a matter of debate. The length of the dipole is based on the standard length equation.

$$l = \frac{300 \times 0.5 \times 0.96}{f}$$

where l is in metres and f is in MHz.

Windom gave his offset (from centre) as L x 0.14 or (14%). The true OCF dipole must use coaxial or parallel transmission line to eliminate feeder radiation. Two popular amateur handbooks give the offset as L x 0.167 or 16.7%. I have also seen designs with an offset of L x 0.174 or (17.4%). There seems to be a bit of variation.

The objective of these offsets is to strike a spot on the antenna off-centre that has an impedance of around 300 ohms resistive. If this sweet spot can be found, then a 4:1 or 6:1 balun can be used to provide a match close to 50 ohms.

Even if the impedance varies around 300 ohms a balun will bring the impedance close to 50 ohms. Some designers use a 6:1 balun. I find a 4:1 is all that is necessary if the right spot can be found. The problem with finding

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the exact spot off centre is complicated in my view by unpredictable variables. The best that can be achieved is close and then practical adjustments have to be made to the antenna. Wire antenna characteristics are always a bit rubbery. You can not take designs out of a book and expect the exact same results in any two locations. This does not matter in practice. Where exactly we will find 300 ohms off-centre is dependent on the height above ground, type of ground, other nearby antennas or objects, wire diameter, and so on.

So, what is the correct distance off-centre? Well, it is not possible to give an exact distance. For a dipole about 10-15 metres above ground, the distance from the centre to the 300 ohm feedpoint is between 30-35% of the length of the antenna. Or 15-17.5% off-centre. Middle ground is very close to 33.3% from one end. In other words the best place to start is to place the feedpoint one third of the antenna length from one end. I stick to these dimensions as it is easy and very close to ideal and we have a 1/3 – 2/3 antenna. Figure 2 shows the dimensions of an OCF dipole for 80 metres. The impedance one third of the way from the end should be between 200 and 400 ohms and, of course, resistive.

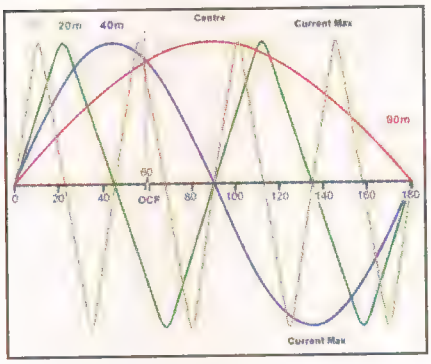

Figure 3: A visualisation of the impedance at different places on any antenna.

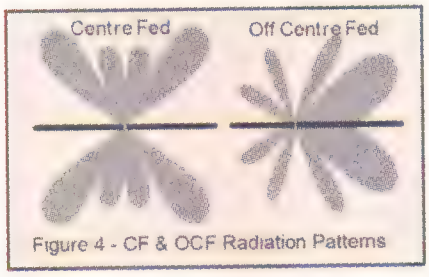

Figure 4: CF and OCF radiation patterns.

Note: When on 80 metres I operate usually much lower down than 3.7 MHz and, in fact, the SWR is very flat even if you vary these dimensions by up to 400 mm. I have found that a good, neat, and easy to remember size for an 80-metre OCF is 27 metres one side and 13.5 metres the other. I use 1.25 mm galvanised iron wire because it is cheap, strong, hard-to-see and is stretch resistant. However, you can use any wire that you like.

Once up, you can test measure the SWR on 80 metres and adjust the length by adding or subtracting to both sides. You are adjusting for minimum SWR not a 1:1 SWR.

An ordinary centre-fed-dipole has a low impedance at the resonant frequency and at odd multiples of that frequency. A centre-fed dipole resonant on 7 MHz will also have a current loop (a current maximum) or low impedance at the third harmonic on 21 MHz.

If you are going to use a centre-fed dipole on multiple bands, you really need to cope with high SWR and use a parallel wire feeder to minimise transmission line loss. On the other hand an off-centre-fed dipole fed 1/3 rd the length from one end will have about 300 ohms impedance at the resonant frequency

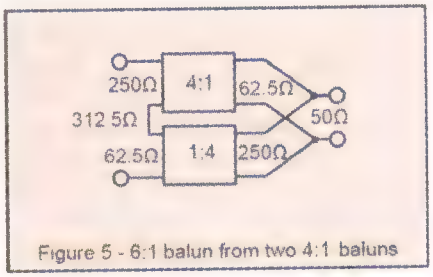

Figure 5: 6:1 balun from two 4:1 baluns.

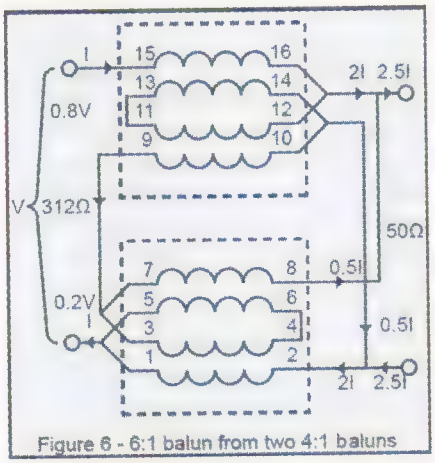

Figure 6: Circuit of a 6:1 balun from two 4:1 baluns.

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and at all even harmonics. The antenna in Figure 2 is resonant on 80 metres and has a feedpoint impedance of about 200-300 ohms which is transformed to be close to 50 ohms by the 4:1 balun. This dipole also has roughly the same input impedance on 80, 40, 20, 10 and 6 metres. Pretty good, eh!

Now that is a far more useful antenna. If adjusted correctly, you can easily get five bands of operation from the one antenna with little or no tuning. A tuning unit will allow operation on other bands as well but the SWR will be quite high on some resulting in increased feedline loss.

Looking at current distribution

Figure 3 shows a very useful and simple technique for visualising the impedance at different places on any antenna. The horizontal line in Figure 3 represents a half-wave antenna. I have marked off the length of the antenna in degrees from 0-180. The antenna is resonant on the 80-metre band. Most of us are very familiar with the current distribution of a half-wave dipole shown in red. Have a look at Figure 3 and ignore all except the red curve and you will see the current distribution of any half-wave antenna.

As you would expect, the current is maximum in the centre (90 degrees) and minimum at each end (0 and 180 degrees). There is no need to show the voltage distribution. If we did we would draw another set of curves 90 degrees out of phase with those shown. The current and voltage distribution of this half-wave antenna is the same no matter where we attach the feedline. Whether we feed the antenna at the centre, the end or somewhere else in between the current and voltage distribution will be the same as that shown in Figure 3.

Where the current is maximum, the impedance is minimum. The more current, the lower the impedance. If we connected to this dipole in the centre (90 degrees) we are connecting at a high current point and, therefore, a low impedance (from Z=E/I). The typical impedance at the centre of a resonant half-wave dipole is low – about 70 ohms. If we were to connect a typical low impedance feeder to either end (at the low current points) where the impedance is high, we would need to use some sort of impedance matching device. For example, the matching section of a J-pole allows us to connect a coaxial line to the high impedance end of a half-wave antenna.

Suppose we were to use this 80-metre dipole in Figure 3 on 40 metres. The current distribution for 40 metres is shown in blue. We get a full cycle of current distribution because the antenna is now a full wavelength. Notice how the current at the centre (90 degrees) of the antenna on 40 metres is now at minimum. The impedance will be high, indeed, very high, this dipole would not work on 40 metres unless we had a special matching system or tuned feeders. This antenna will not have a low impedance at its centre again until we tune it to its third harmonic – that is the 15-metre band (21 MHz).

The principle behind the OCF dipole is to find a compromise point on the antenna where the impedance is low enough to connect our feeder – which is usually the coaxial line – and operate on multiple bands. With the OCF we place the feedpoint as shown in Figure 3 at 60 degrees from one end. Have a look at the amount of antenna current at 60 degrees for the 80, 40, 20 and 10-metre bands. The current is not maximum for any of the above bands but the current is high and about the same value for all bands. This means the impedance on 80, 40, 20 and 10 is about the same. The impedance is theoretically about 300 ohms. It is not bad on 6 metres either though this is not shown. In practice, the actual impedance range will vary between 200 and 400 ohms across the mentioned bands. Now, that is a manageable impedance.

With a balun (either 4:1 or 6:1) connected at the feedpoint we will get multiband operation with little and often no tuning at the transmitter. A balun at the feedpoint prevents feeder radiation and transforms the impedance to a lower value close to our coaxial transmission line. Even if the impedance is not 300 ohms the use of a balun to transform by a factor of 6:1 reduces the impedance error by a factor of 6. Suppose we have exactly 300 ohms on any band, this will be transformed by a 6:1 balun to 50 ohms and the SWR is 1:1. What if, for some reason, the impedance is high, say 400 ohms. The balun will transform the 400 ohm too-high impedance to 400 ÷ 6 = 66.7 ohms. Wow! Who cares? It is going to work and work well at 66.7 ohms as the SWR with a 50-ohm line will only be 66.7÷50 =1.3:1. If the off-centre impedance was out in the opposite direction – say 200 ohms, then this is transformed by the balun to 33.3 ohms which is an SWR of 1.5: 1 on a 50-ohm line. Transmission line baluns can tolerate impedance aberrations of this scale. As mentioned, I prefer to use a 4:1 balun as it is a simpler and more lightweight balun.

Performance of an OCF

The OCF dipole is a good non-compromise antenna on its even harmonics. I have heard arguments about how it compares to a conventional dipole. Is it better in terms of antenna gain or radiation pattern compared to a conventional dipole?

Well, the OCF is a half-wave antenna on the lowest band of operation. Our OCF dipole on 80 metres will work as well and have exactly the same characteristic as any dipole on 80 metres.

On the higher harmonics, the OCF will become a progressively longer antenna. On 40 metres our OCF will be a full wavelength. On 20 metres, two wavelengths and on 10 metres, it will be a full four wavelengths. The longer an antenna becomes, the more lobes it will have.

The left side of Figure 4 shows a centre-fed two wavelength dipole and its radiation pattern. There are more pronounced lobes on this antenna but it is still essentially bidirectional. There are four main lobes. The same antenna at double the frequency would be four wavelengths.

More minor lobes will appear in the centre and the four major lobes will drop down closer to the line of the antenna. In other words, the antenna becomes increasingly directional towards the ends, though this is somewhat exaggerated in the diagram.

When we feed such an antenna off-centre, there is a tendency for the radiation pattern to become stronger towards the long side of the antenna. The longer the antenna, the more pronounced is the towards-one-end directivity. So theoretically, our OCF antenna will become slightly directional towards the longer end. However, due to other reflections, this may not be at all obvious to the user. Essentially an OCF is no better in performance than

the centre-fed dipole. The advantage of the OCF is its operation on the even harmonics. The losses are lower because the lower overall SWR means less feedline loss. This antenna is resonant on its harmonics. An SWR is acceptable up to 2.5:1 on typical coaxial runs. Typically though, this antenna will achieve an SWR of between 1.5:1 and 2:1 on most bands and this is great – even 2.5:1 is good but you will need an ATU depending on the type of rig you use. Older radios with output tuning will handle this SWR. There are some bands – for example 30 metres (10.5 MHz) where a low current (and high voltage) will appear at the 60-degree feedpoint. See Editor's note. Could you use this antenna on 30 metres with matching? Well, yes, you could but you can expect the balun not to work well or at all under high SWR. You can expect balun and feedline losses to be high(er). You can expect feedline radiation. If you are okay with all of that, then try it out.

The Carolina Windom!

There is a variation of the Windom and OCF called a Carolina Windom. This antenna is much the same as that shown in Figure 2. However, with the Carolina Windom there is deliberate feeder radiation! I believe this is achieved by the balun at the feedpoint not doing what baluns are meant to do! That is to prevent feeder radiation. With the Carolina Windom it appears that some feeder radiation is desired. That is, some radiation from the feeder is permitted or deliberate! Consequently, the radiation pattern is modified from that of a dipole and allegedly this is an advantage on some communication circuits. I am sceptical. The Carolina Windom has an additional current choke balun on the coax prior to entry into the shack to keep RF out of the station. This is evidence that the balun is not effective.

A balun for the OCF

Because the OCF is not fed at the centre, the RF impedance path for each side of the antenna is different; that is, the currents on each side will be unequal. Knowing the impedance is around 300 ohms, one could be tempted to feed the antenna with 300 ohm ribbon.

Indeed, this would work and may work well but it is no longer an OCF dipole. Because the OCF has unequal impedance each side of the feedpoint then a balanced feeder would become unbalanced and become a radiator! With coaxial cable this also means that antenna current can flow on the outside of the feeder and produce radiation. Feeder radiation is undesirable for many reasons and, in particular, the increased potential for overload to neighbouring equipment (including your neighbour's). In order to prevent it, we need to use a balun at the feedpoint of the OCF.

Which balun to use?

Well, depending on which author you read, you often get different answers. First the impedance ratio seems to vary a lot. A 4:1 balun on the OCF is common. Some commercial OCFs use a 6:1 and there are reports of 9:1 baluns being used.

As mentioned the impedance of an OCF can be expected to vary between 200 to 400 ohms. I think the optimum balun is a 6:1. However, I have used a 4:1 balun and favour it due to its lighter mass. A 4:1 can be strung in mid-air with the dipole tied off at each end. The 6:1 balun that I have used comprising two 4:1 Guanella baluns is configured to give a 6: 1 impedance transformation. In my view, Guanella baluns withstand higher deviations in impedance and SWR than Ruthroff baluns.

A 6:1 balun

Whilst not the only method, it is easy to make a 6:1 balun from two 4:1 baluns. The same method can be used in other applications and other impedance transformations so it is worth having a close look at the technique.

Figure 5 shows the block diagram of the method. Here we see two 4:1 Guanella-type transmission line baluns (I will show you how to build these devices shortly). In our case they would be transmission line baluns but for other applications they could be other types of devices. We want an impedance transformation of 6: 1 (or 1:6) to connect a 50-ohm coaxial line to a feedpoint on the OCF of about 300 ohms.

A transmission line balun designed for the impedance ratio 100:25 would not work as well (if at all) in a network with 200 and 50 ohm impedances even though the ratio is the same. The exact ratio of the design in Figure 5 is 312.5 to 50 or 6.25:1. For practical purposes

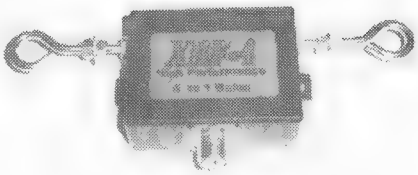


Figure 7: A commercial 4:1 Guanella balun.

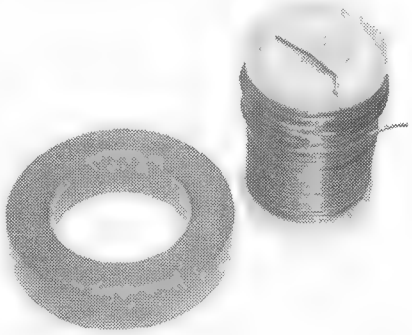


Figure 8: FT140-61 core plus enamelled wire.

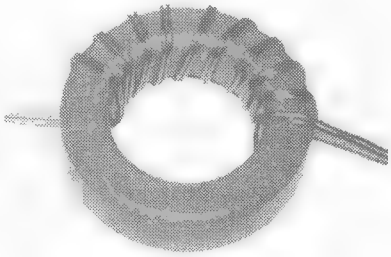


Figure 9: A 1:1 Guanella balun.

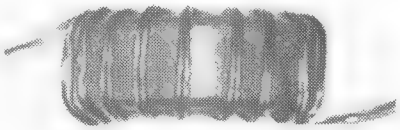


Figure 10: Side view of 1:1 balun.

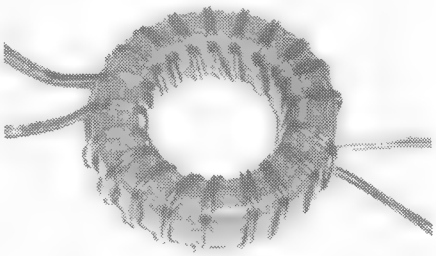


Figure 11: Two 1:1 Guanella baluns.

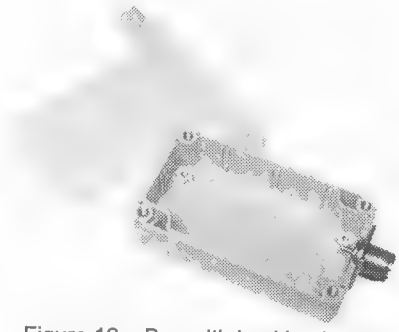


Figure 12a: Box with backing board.

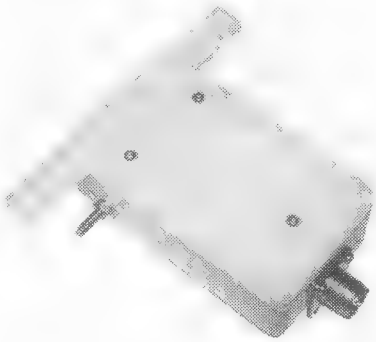


Figure 12b: The backing board fitted on to the box.

this is 6:1. Each of the 4:1 baluns is a Guanella balun. Each balun should be made from two transmission lines with a characteristic impedance which is the geometric mean of the input and output impedance for that balun. The optimum impedance for the lines making up each balun is then

$$Zopt = \sqrt{250 \times 62.5} = 125 \text{ ohms.}$$

Each balun should be made from 125-ohm bifilar windings on a toroid former with a permeability of around 125-250.

So how do these two baluns as shown in Figure 5 produce a 6:1 balun? Each balun is identical and has an impedance transformation of 250:62.5. Notice on the left-hand side how the two baluns are connected in series. The 250 ohms of the top balun is in series with the 62.5 ohms of the bottom balun. This gives an impedance on the left side of 250+62.5 = 312.5 ohms. On the right-hand side the two baluns are connected in parallel. Now 250 ohms in parallel with 62.5 ohms is 50 ohms. The block diagram of Figure 5, I hope, helps make this easier to visualise.

Figure 6 is the full schematic diagram showing the transmission lines that make up the two 4:1 baluns and how they are connected to produce a 6:1. The relative currents and voltages are shown on

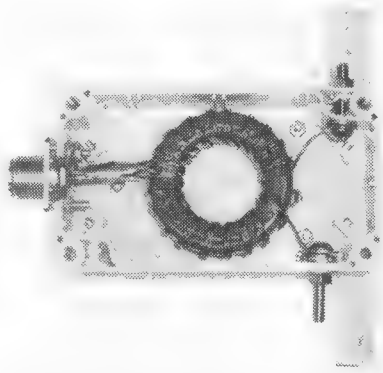


Figure 13: The mounted 4:1 balun – consider using eye bolts instead of the backing board.

Figure 6 for those who want to look at the operation a bit deeper. The top balun is a 4:1 from left to right. An impedance step down of 4 will produce a current increase (step up) at the output by a factor of 2. The current (and voltage) ratio is equal to the square root of the impedance ratio. So, if the input to the top balun is taken as "I" as shown, then the output current that this balun contributes to the load will be '2I'.

The bottom balun is connected as a 1:4. The output current that this balun contributes to the load is 0.5I. The total current is then '2.5I' for an input current of 'I'. The impedance ratio is:

$$2.5^2 = 6.25$$

which, for practical purposes, is close enough to 6:1.

As you can see a 6:1 Guanella balun is a rather complicated balun. It is also heavy. For this reason, I make a small compromise and settle for a single 4:1 Guanella balun for the OCF dipole. I have no problems with my OCF and a 4:1 balun. My highest SWR is 2:1 on any band. On 80 and 20 it is closer to 1.5:1. Please remember that these are very good Standing Wave ratios for a resonant antenna.

The Australian-made XRF-4 (4:1) is a high-quality, low-loss, Guanella balun. This balun is also fully encapsulated for superior weatherproofing. For more information on this balun visit http://xrf.redirectme.net/

Building your own 4:1 Guanella balun

To make the 4:1 balun you will need some enamelled wire. The impedance of the parallel line used to make this balun is 100 ohms. 1.0 mm enamelled wire

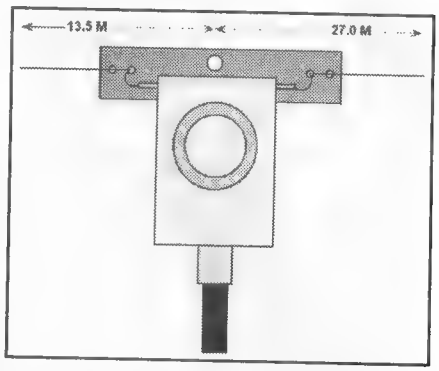


Figure 14: The antenna dimensions.

with no spacing provides a characteristic impedance close to 100 ohms. A wire diameter from 0.8 to 1.2 mm will be adequate for the job. You will need about 3 metres of the wire.

The toroidal core needs to be the correct permeability and the right size to get the required transmission line turns. I suggest an FT-140-61 material. FT (Ferrite Toroid) 140 is about 40 mm outside diameter. Type 61 material has a permeability of 125. Cores with permeability between 125 to 250 are the best choice for this balun.

The start of a 4:1 balun is, in fact, a 1:1 balun. Take about 1.8 metres of wire and fold it in half. You have made a short length of 100 ohm transmission line. Now, mostly using your thumb, wind this line around the core. You need 7-8 turns. You are not winding a transformer. What you are doing is winding a short length of parallel transmission line around a ferrite core. Do not let the wires twist or overlap. Keep the pair of wires close together. These wires are a transmission line. They are not the windings of a transformer. The line should be kept flat and close together otherwise the characteristic impedance will alter.

You do not want the parallel line to drift apart with handling. To prevent this you could use cable ties to hold the line together. My preferred method is to tack the line in position on the toroid with spots of Araldite. A hot glue gun would work just as well. You have now made a 1:1 balun on one side of the toroid. The next step is to make another 1:1 balun on the other side of the toroid as shown in Figure 11.

You end up with four wires in each end of the toroid as shown. What you have is two 100 ohm transmission lines on the

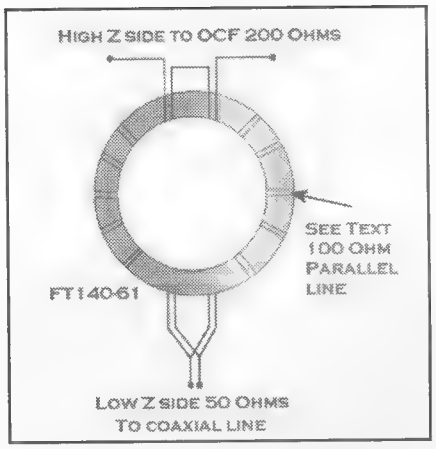


Figure 15: Balun wiring.

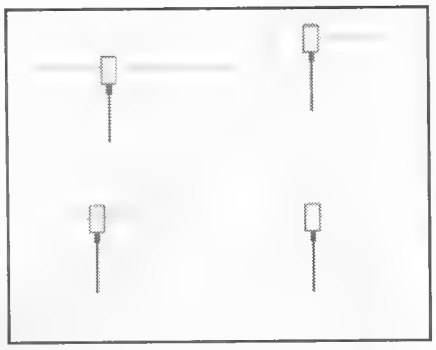


Figure 16: Running the antenna wire.

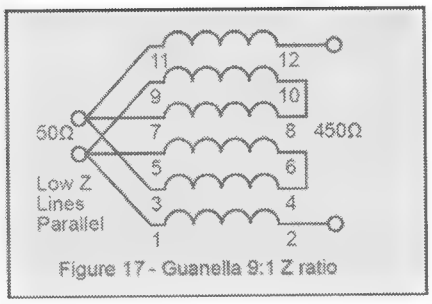


Figure 17: Schematic diagram of a 9:1 Guanella balun.

core. These lines are parallel connected on one side to give an impedance of 50 ohms. On the other side the two lines are connected in series to give an impedance of 200 ohms. Thus we have a 50 to 200 ohm Guanella balun. On one side of this balun you will be connecting your 50 ohm line and the other side will go to your OCF dipole. If you were using a standard dipole you would not use this balun, instead you would use a 1:1 Balun made with 50-ohm coaxial or parallel line. The toroid and the lines of the 4:1 balun cannot take much mechanical stress plus it is a good idea to waterproof the whole lot so we need to house the balun somehow.

The XRF balun shown in Figure 7 is fully waterproofed in epoxy resin. Almost any plastic instrument case mounted on a plastic backing board will do. Plastic sheets can be obtained easily and cheaply by purchasing plastic cutting board. I purchased a set of five boards for $12 which provides enough plastic sheet to make 12 baluns.

The photo in Figure 12 shows how the plastic sheet is cut to fit the size of the box you have. The sheet is very easy to cut using a hacksaw and a jigsaw is even easier. The sheet is extended away from the box at the top and has holes drilled for the dipole wire connection. Figure 12 shows the box with backing board. The box shown is a little expensive (about $7). A box which is designed to be mounted on to a flat surface can be purchased from a parts supplier for about $5-6. An SO-239 socket has been mounted on one side of the box for the 50 ohm cable connection. An alternative is to have the coaxial cable go straight to the low impedance side of the balun and fix it to the cutting board with at least three cable ties.

An alternative to the backing board shown in Figures 11 and 12 is to use eyebolts as shown on the XRF 4:1 balun. If you are going to make a mistake in the construction of the balun it will be in the connection of the two transmission lines at each end. On one side the two 100 ohm lines are connected in series (the high impedance antenna side of 200Ω) and on the other side the two 100 ohm lines are connected in parallel (the low impedance 50Ω line side).

To make this a little clearer, refer to Figure 15 below. Here you can clearly see the series connection on the high impedance side (that goes to the antenna) and the parallel connection on the low impedance side.

Many of us are limited by the height we can have our antenna and often, on 80 metres, we are pressed for space. The overall length of my OCF for 80 metres is 40.5 metres (27 + 13.5). I have a straight run at about 10 metres height. However, you can treat the OCF like any half-wave horizontal dipole and bend the legs in various configurations as shown in Figure 16. If it is difficult for you to get height, consider the inverted "V" configuration. It is the centre of the antenna (where most of the radiation occurs) that should be as high as possible. The ends can be brought lower down and terminated through insulators to a building, pole or fence line.

A bit more about baluns

Just to round off, I would like to talk a little more about baluns. I don't recommend a 9:1 balun for the OCF antenna. However, I thought I might include the circuit diagram of a 9:1 Guanella balun since we have already covered the 1:1, 4:1 and 6:1. I may as well finish off with the 9:1 just for completeness. This may also help consolidate how these and other transmission line baluns really work as well.

Now Figure 17 does look a bit complicated but please take the time to have a good look at it. Recall how the 4:1 balun was simply two 100-ohm transmission lines on a toroid. Series connected on one side to give 50 ohms and parallel connected on the other to give 200 ohms. In Figure 17 we have three transmission lines: 1-3 on the left goes to 2-4 on the right – that is one transmission line. This 9:1 balun transforms 450 to 50 ohms. The geometric mean of these two impedances is

$$\sqrt{450 \times 50} = 150\Omega$$

So you would have to use the appropriate wire size and perhaps adjust the spacing to make three parallel lines each having a characteristic impedance (Zo) of 150 ohms. You can use the standard equation for calculating the Zo of a parallel line. The two wires could be held the correct distance apart by hot glue or sleeving before you wind them on the toroid.

On the right-hand side the three lines are in series to give 450 ohms. On the left-hand side the three 150 ohms lines are paralleled to give 50 ohms. If your three lines were not 150 ohms you would still have a 9:1 balun, it would just not be 450:50 – the 9:1 ratio would be the same but the input and output impedances would vary according to the characteristic impedance of the lines you use. By the way you can use coaxial cable to make these baluns. However, it is difficult to get a broad range of impedances with coaxial cable. The most common impedances for cables are 50,

continued on page 26

News from...

Waverley Amateur Radio Society – *90 years on*

Simon Buxton VK2UA

The aim of this article is to summarise the history of the club, its current activities and to outline some of the events to celebrate its 90th anniversary in 2009.

The club was founded on 27 January 1919, following the end of WWI, by a group of 17 radio experimenters and enthusiasts living in the Waverley area. Three of these founders were among the 27 licensed radio experimenters in Australia in 1911.

Since that time the club has been continuously licensed, initially as N249 (licence 249 with prefix N for NSW), 2BV and from 1929, VK2BV, though it has not operated for periods of time including WWII when amateur radio operation was not allowed. In view of this, the club claims to be the oldest continuously licensed club in Australia.

The club has copies of the first licence application together with details of the transmitter and receiver proposed to be used which had to be supplied as part of the application. This and copies of all other material relating to Waverley held by the licensing authorities were supplied to the club in 1985.

Group of founding members in 1919.

Meetings up to 1954 were held weekly on a Thursday evening in the home of Frank Geddes, the club's first vice president, at 'Almont' 13 McPherson St, Waverley. This was also the location of the club station.

Waverley has never been a large organisation, having a membership between 15 and around 40 active members currently. Today the club is flourishing with permanent premises at Rose Bay.

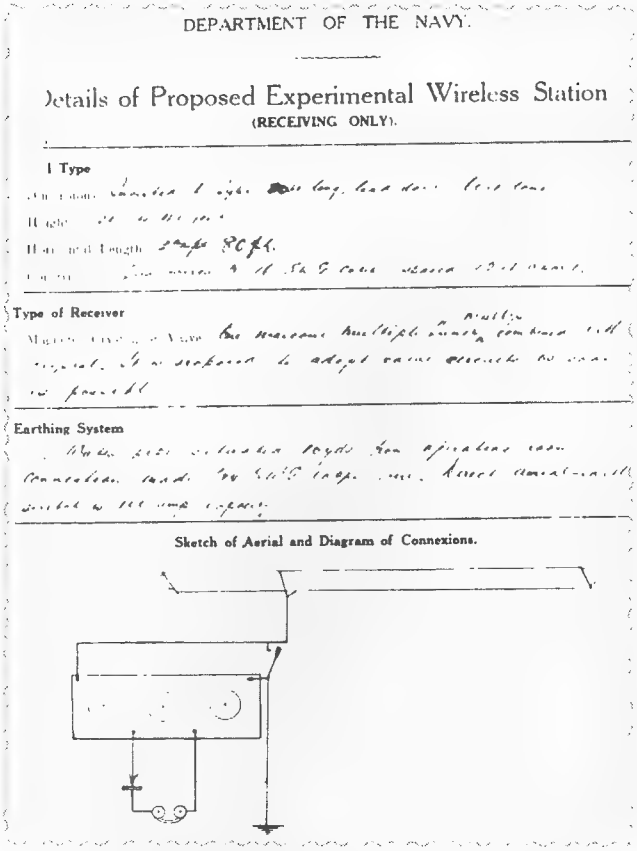
The 1920s

Within a year of its founding, the club was able to obtain its first licence for a one valve receiver and a spark transmitter and was assigned a wavelength of 200 metres by the Navy department, who then controlled the use of radio. Copies of the specification and circuits of the equipment to be used and the club rules were required as part of the application submitted in May 1920. The experimental licence was granted in September that year, one of only 16 throughout Australia of which five were in NSW.

For a number of years the club had to nominate a trustee who was responsible for the club's adherence to licence conditions, one of which was that anything the club heard on air whilst experimenting was to be kept secret. In addition a copy of the club rules had to be deposited with the authorities. This responsibility was still in force after WWII when the club secretary had to complete a Statutory Declaration for this purpose. Experimental licences at this time cost £2 and were issued for a particular wavelength, the club being allocated 1000 metres in 1922.

Group of founding members in 1920.

Virtually every change in operating conditions had to be approved by the local radio inspector and in 1922 the club got into trouble when wishing to transmit music, which was not forbidden then, over the air to a dance hall in Coogee, an early demonstration of telephony and possibly the first amateur transmission of music in Australia. Permission was given for the club's receiver to be operated in the dance hall but apparently the club



DEPARTMENT OF THE NAVY.

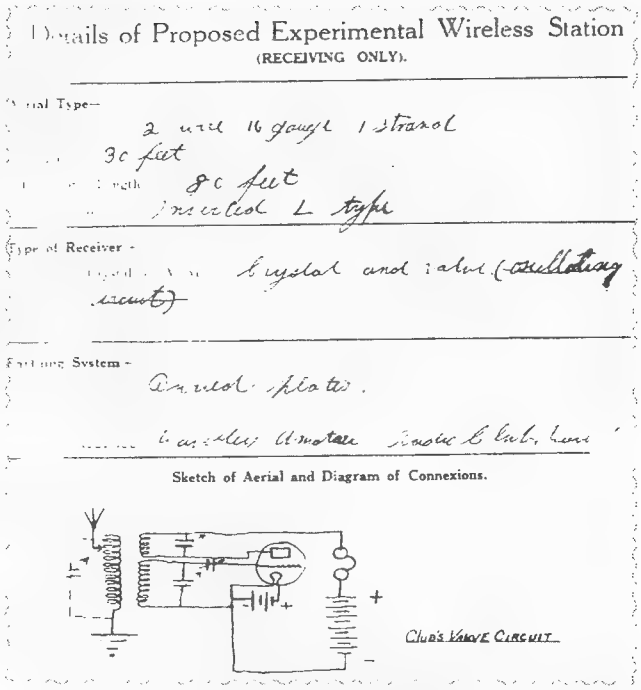
Details of Proposed Experimental Wireless Station
(RECEIVING ONLY).

Type of Receiver

Earthing System

Sketch of Aerial and Diagram of Connexions.

Details of the club's antenna in 1920.



Details of Proposed Experimental Wireless Station
(RECEIVING ONLY).

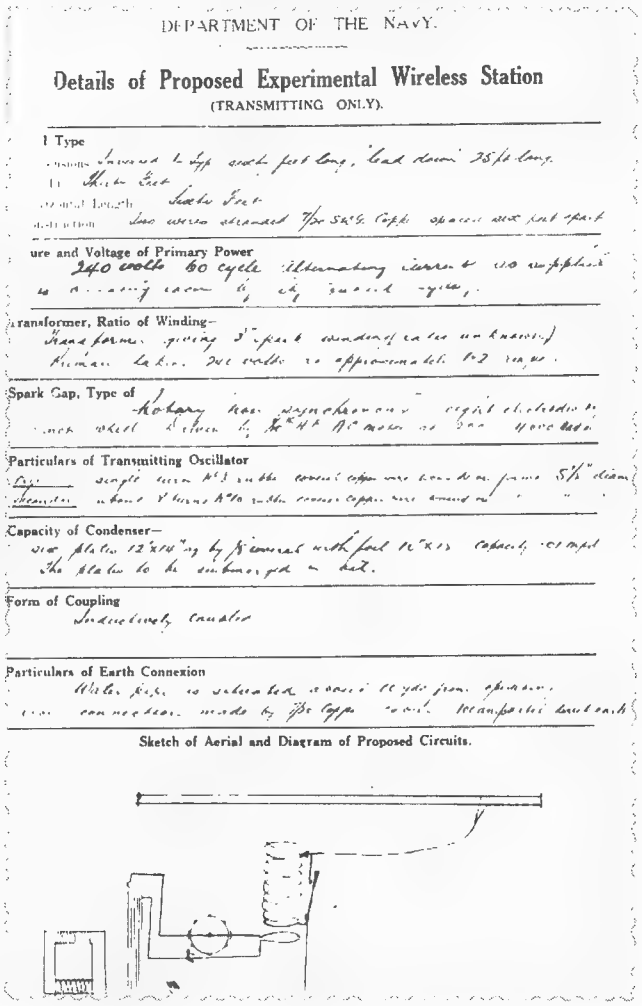
Type of Receiver

Earthing System

Sketch of Aerial and Diagram of Connexions.

Club's Valve Circuit

Details of the club's receiver in 1920.



DEPARTMENT OF THE NAVY.

Details of Proposed Experimental Wireless Station
(TRANSMITTING ONLY).

Type

Particulars of Transmitting Oscillator

Capacity of Condenser

Form of Coupling

Particulars of Earth Connexion

Sketch of Aerial and Diagram of Proposed Circuits.

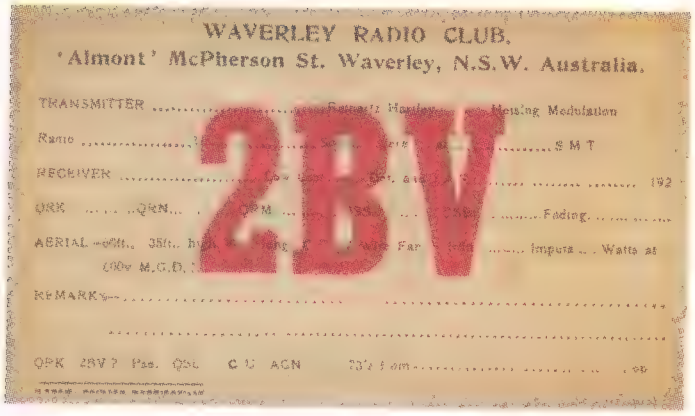
Details of the club's proposed transmitter in 1920.

member making the transmission, R C Allsop 2YG, had not got approval to transmit from that area. As a result, the inspector recommended that the licences of both the club and Allsop be suspended for a period, but fortunately this view was not supported by his superiors after the club submitted its case.

Control of radio by this time had been transferred to the PMG who were very stingy, requesting that the club reimburse them for 8d for sending a letter with insufficient postage. After a second request, the club paid this in postage stamps. Also in 1922 the club's call letters were changed from N249 to 2BV (the term 'callsign' was not then in use). Call letters were in fact the licence numbers for receiving with licences being endorsed where transmitting had also been approved. At this period the club joined the Radio Association of Australia, which presumably was a rival to the WIA.

In May 1923 the club requested a change in wavelength to 400 metres and a few weeks later obtained approval to broadcast a concert from a church hall as another demonstration of wireless telephony. Apparently this was to a paying audience and the proceeds were shared between the club and the church.

By 1925, a certificate of proficiency was needed to obtain a licence, and the club's licence was not renewed until Gordon Thompson 2GT submitted his AOCP as evidence. In this year another change in wavelength, to 90 metres, was requested and granted with power limited to 10 W. Use of additional shorter wavelengths of 30 metres and 40 metres were approved the following year as public broadcasting had been introduced which occupied the longer wavelengths.



1925 QSL card.

The club became affiliated with the Wireless Institute of Australia in 1926 and has remained so ever since. Waverley was invited to set up a working radio station at the Sydney Town Hall for the week long Wireless Exhibition in May that year. Approval was eventually granted but not before both the club and the organisers had submitted the appropriate details.

The club requested permission from the PMG to transmit slow Morse and telephony on 230 metres for one hour every evening in 1927 but was refused on the grounds of risk of interference to broadcasting in a densely populated area. Either postal services or the PMG's clerical procedures were unreliable around these years, as several reminders were sent to the club requesting licence renewal or by the club to the PMG claiming no acknowledgement of their renewal payment. The 1928 licence permitted transmission on 125-250 metres with power again limited to 10 W.

The 1930s

The club's transmitters covered 7Mc/s, 3.5Mc/s and 1200 Kc/s in 1931 and it remained continually licensed throughout the 1930s. (These were the units in use at the time, well before the adoption of the SI system. Today we use MHz and kHz. Ed.)

During this decade there was a lot of interest in the possibilities of television and in 1933 two club members, Gordon Wells and Mr Pickering 2KI made what is believed to be the first Australian television transmission between Mr Pickering's home in North Bondi and the club rooms at Waverley. The technique was based on J L Baird's mechanical scanning procedure. Gordon Wells was club president for seven years but never became licensed. It was said that with his excellent technical abilities, he was too busy helping other members get their AOCP to have time to sit himself. He was made an Honorary Life Member of the club. In 1936 Mr Pickering donated his television equipment to the club who then applied to get approval for transmission in the 56-60 Mcs band using a special callsign. Approval was granted but the special callsign was denied and the club was prohibited from transmitting commercial material.

The WIA held an amateur exhibition at the Presbyterian Assembly Hall in 1936, where the first public television demonstration was conducted by Gordon Wells and Maurice Lusby. Gladys Moncrieff, a well known singer of the day, was the star and can claim to be the first woman to be televised in Australia.

The club continued operating their equipment until WWII was declared and all transmitting activities were curbed. Members still continued meeting with the Secretary Mr. J. Howes VK2ABS becoming interested in motion picture projection. He built a professional quality full size projector and sound system which was used to entertain members.

Post-War Activity

In 1946, following the end of WWII, the club requested that their licence be renewed and their old callsign re-allocated. This was done, but not until the Secretary had completed the Statutory Declaration regarding secrecy and the names of licensed members supplied. A warning was issued with the experimental licence pointing out that it did not permit the club to receive broadcasting stations unless a separate broadcasting licence was purchased. The club had to supply a copy of its constitution to the PMG. Amongst other things, the club required that new members be elected by secret ballot with 50% or more in favour of the applicant and that members be over 13 years of age and of British parentage.

At the end of 1946, an application was made to hold a field day, which presumably meant operating portable equipment and we were asked for more detail but no further correspondence can be found.

Official records over this period required inspection of the club equipment and these reports signified that operation of the club station was patchy for the next few years. For example the 1951 report stated that the club had no equipment and was not operating radios. In 1954 however the transmitter was described and 1955 represented the last days at 'Almont' with new official addresses of the club as Meymott St, Randwick and, from 1965, Birrell St, Bondi being supplied to the PMG until the 1970s. Inspection reports show that these addresses housed operating club equipment.

The club seems to have been dormant by 1970, but a few amateurs, including Phil Card VK2ZBX, Duane Foster VK2VE and Eric Van de Weyer, then VK2KUR, kept the licence active and decided to construct and operate a two metre repeater in 1975 with the callsign VK2RBV. A licence to operate was issued after endorsement from the WIA and it was installed at Clovelly and later moved to Bondi, continuing in use for a few years. During the 1980s the two metre and 70 cm repeaters at Paddington, VK2ROT, covering the eastern suburbs, was set up by the now defunct OTC Radio Club on the roof of their building.

1985 Rebirth

In the meantime the club licence had been renewed regularly by Duane Foster and in April 1986 a meeting was held to reconstitute the club and was attended by many eastern suburbs hams. Officers were elected and a new set of rules formulated. The club was able to obtain the use of the Scout Hall in Cooper Park Road, Bellevue Hill for its meetings and radio station. For at least the next two to three years the club operated a station from this site and hosted the annual Jamboree of the Air (JOTA) for local scouts but then had to move out at the request of the council who wanted the building demolished. For the next few years meetings were held in various rented locations around Bondi Junction.

In 1995 a request was made to the Scouts for use of part of the Rose Bay Scout Hall which at that time was unoccupied. This was granted as it meant that the building continued to be used and the upstairs area was made available for use by the club. Then, the club built up its operating station, provided audio-visual equipment and furnished the room for meetings.

Late in 1995 the club was honoured with a visit by Gordon Thompson, by then VK2AVT, one of the original founders, who fascinated members and visitors with his reminiscences of the early days of the club where he held a number of positions including those of Secretary and Trustee of the licence. He was made an Honorary Life Member and became a silent key in 2001, aged 96.

At a club meeting in 1995, showing Gordon Thompson VK2AVT at right, one of the founding members from 1919 and Ben Buxton VK2XUF our then youngest member who had just set up the club website.

VK2AVT from the previous photo (at left)

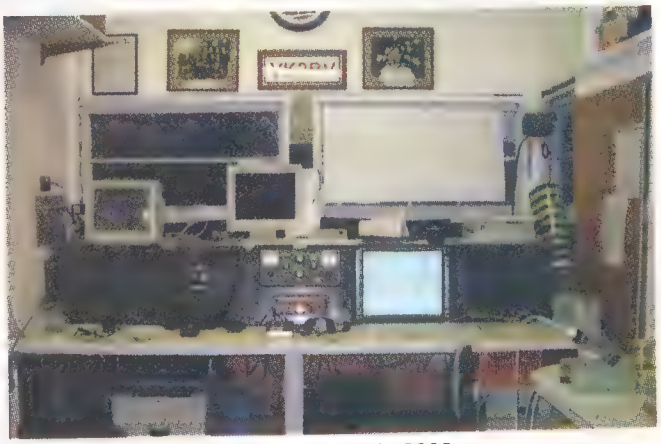
VK2AVT during the same (1995) meeting.

The clubhouse in 2003.

The clubhouse in 2005.

The clubhouse in 2007.

A club QSL card in 2008.



The club station in 2008.

At this time the Waverley website was created by one of our teenage members, Ben Buxton VK2XUF, which we believe to be the first ham radio club website in Australia.

The club still operates from Rose Bay but it now shares space with a Rover Scout group and in the past few years the NSW scouting body has done a considerable amount of work towards essential maintenance and improving the building so that it can provide a more functional venue and be available to other users.

The Waverley club currently has around 40 active members, a number of whom have joined following training for Foundation licences. The club has two regular meetings per month, a Saturday afternoon project day to carry out radio related activities and improve club facilities and a weekday evening meeting with informative talks and to discuss club affairs. In addition there is an annual auction in June as well as increased participation in contests and portable operation. Hosting JOTA for local scouts has occurred every October since moving to Rose Bay. Being close to the city, hams from overseas often drop in to the clubhouse when visiting Sydney.

Management of the Paddington two metre and 70 cm repeaters, VK2ROT, was taken over by the club a few years ago.

90th Anniversary Activities

A number of activities will occur to celebrate the club's 90th anniversary this year.

In November 2008, the ACMA allocated the club the special event callsign VI2BV90 for use over the period from 24 January to 1 February 2009. Other activities, not related to the special event callsign include a commemorative dinner and a special award over 12 months for contacts with the club, its officers and members. Award points depend on the station contacted, with multipliers based on the contact mode.

A commemorative DVD has been produced containing archive material including photos, video clips, historical and other documents as well as several versions of the club's website over the years. The anniversary has also created interest by club members in restoring or building replicas of early radio sets and additional on air activities are being investigated. Full details of the award or other anniversary activities are posted on the club's website or may be requested by post to the club at PO Box 634, Rose Bay NSW 2029.

The club's web site at www.vk2bv.org is kept up to date and has expanded over the past 12 years providing a large amount of information about Waverley's history, membership and activities.

Note: Simon Buxton VK2UA is the Publicity Officer for the Waverley ARS.

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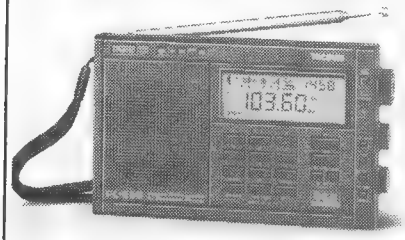
Tecsun PL 600 HF Receiver



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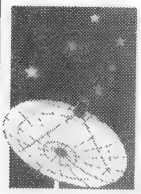

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Understanding and building the OCF dipole antenna

continued from page 21

75 and 90 ohms.

I hope that has put to bed once and for all that transmission line baluns, Guanella (current) and Ruthroff (voltage), are not transformers. Properly wound baluns such as those discussed are very efficient devices. Guanella (and Ruthroff) baluns are not conventional (mutually coupled) transformers. There is no primary or secondary. There is no turns ratio. There is no magnetic coupling between the windings. The Guanella balun described should have an efficiency of around 97% or more. So, almost no power is dissipated in the balun. The wire size matters. There is a right size and bigger is not better. Remember you are making two transmission lines on the toroid not a transformer. Because of the high efficiency (low loss), this balun should handle up to 1,000 watts of power.

As far as the forward power to the antenna is concerned there is no ferrite core. This is because we have transmission "through two transmission lines". There is no external flux around transmission lines. However, if the antenna is unbalanced, there will be leakage or common mode current flow through the balun. These currents are not transmission line mode currents. These currents will see a choking reactance presented by the balun and be stopped or significantly reduced. These leakage currents if extremely excessive can cause heating of the balun (but you have probably got a serious problem that you need to fix). Very high SWR can cause voltage dielectric loss and even flashover between the windings. Again this would indicate a more serious problem with the antenna.

Have fun with your OCF dipole.

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Editor's note: *Equally some modern rigs with semiconductor finals do not tolerate even mild SWRs. In fact circuitry is often included to reduce the RF drive should the SWR rise. If using such a transceiver, the use of an ATU might be worthy of consideration.*

World-leading solar power technology in outback Queensland

Don Marshall VK4AMA

Are you looking for an innovative and sustainable power supply with a capacity far more than your TX/RX can use?

The only downsides of this enticing project are that such an example of advanced technology is available only during daylight hours and that you must be in outback Queensland to use it.

This is a solar 'farm', due for operation early in 2009. Already its five mirrored dishes 13.7 metres across are visually impressive beside the Diamantina Development Road on the outskirts of tiny Windorah, population about 100, between Charleville and Birdsville.

Work began on the project in September 2007 to reduce the township's reliance on diesel-powered electricity generation, to reduce costs, and to reduce greenhouse gas emissions.

Each dish comprises 112 mirrors, each 1100 mm square. They are aligned north–south and are separated sufficiently to avoid shading at any time. They face and follow the sun so that as much sunlight as possible falls on the mirrors between sunrise and sunset. At the end of the day, they track back to the east ready for the next day.

The mirrors reflect and concentrate the sun 500 times onto a panel of high capacity photo-voltaic cells at a central point which convert the light into electricity for feeding into Windorah's town network.

The cells are expected to have an efficiency of 35 percent, claimed to be a world-leading efficiency in production technology, and contrasting with 10 – 12 percent efficiency from conventional flat plate PV cells.

Each dish is expected to generate about 35 kW of electricity, depending on season, time of day and cloud cover.

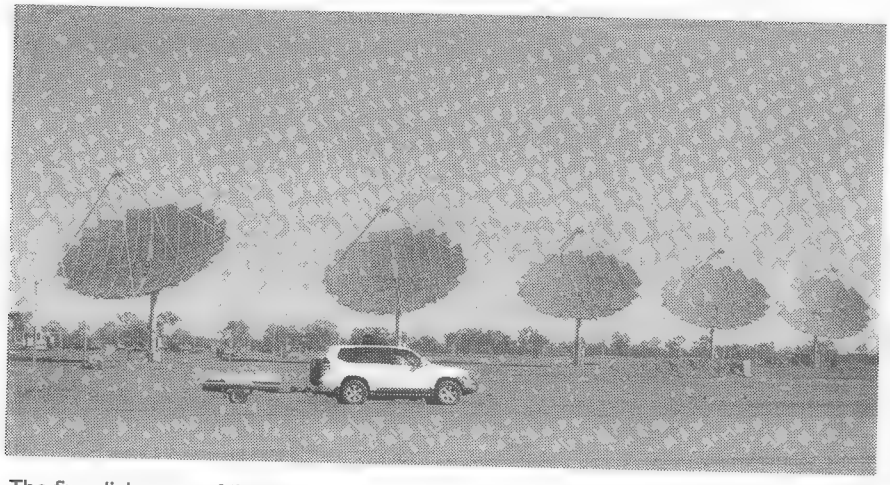
While the solar farm is fully producing electricity silently, the town's diesel generators will be switched off or operate at reduced output. At night or the relatively small time that the dishes are clouded, the generators will be brought back on line seamlessly to supply the town's full demand.

A single dish, compared with the 4WD-mounted FAMPARC multiband mobile antenna.

The system includes batteries to cope with brief cloud cover without having to start the generators.

Modern controls and communications equipment will allow for remote monitoring and control of the operation as well as manual operation on site.

The project is a trial by Ergon Energy to find a viable alternative to diesel powered generation for communities



The five-dish array of the solar farm under construction on the outskirts of Windorah in far western Queensland.

remote from the electricity grid.

Windorah was chosen as the test community for its suitable size and because it has a relatively new power station with interactive technology.

From 2009, the 'farm' is expected to generate about 360,000 kilowatt hours each year. This will save about 100,000 litres of diesel fuel which otherwise would have been used, and greatly extend the life of the generators.

Additional information can be extracted from the Ergon Energy website.

(Also see photograph on front cover)

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WYONG FIELD DAY 2009

8th February 2009

WYONG RACE COURSE

Presented by

CENTRAL COAST AMATEUR RADIO CLUB Inc.

Fees

Adult $10, Free Admission for 17 year olds and under.

Gates Open 6:30 am

The Bistro will be open at 7:00 am for early arrivals.

ATTRACTIONS

★ **TRADERS**

Selling Amateur Radio Equipment and Electronic Equipment

★ **EXHIBITORS**

Representing Amateur Radio Groups, Clubs and Emergency Organisations

Please note: *the Trader/Exhibitor area will be closed to the public until 9:30 am*

★ **FLEA MARKET**

Boot Sales, No Time Restrictions

★ ***SEMINARS*** ★ ***FOX HUNTS***

★ **LADIES' ACTIVITIES,**

Embroiderers Guild NSW and Central Coast Potters Society

★ ***RAFFLES***

Free Tea and Coffee.

Listen for VK2WFD on HF, (QSL Certificates Awarded)
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Further Information and Regular Updates on

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e-mail ccarc@ccarc.org.au

VK2

Tim Mills VK2ZTM
c/- arnews@tpg.com.au

A Happy New Year to all.

CLUBS

Most clubs took a break during January and now will be having their first meeting of the year in February. Please inform VK2 News of your schedule for the year: arnews@tpg.com.au

In a few days time the major VK2 annual event run by the **Central Coast ARC** will be held at the Wyong Racecourse – the Wyong Field Day. On site parking – if it is dry – and the main northern train line passes the venue with Wyong railway station a couple of hundred metres walk away.

Waverley ARS is just completing the operation of special event callsign VI2BV90 in commemoration of the 90th anniversary of its first meeting on the 27th January 1919. A QSL card is available for those making contact during the operation of VI2BV90. Waverley has maintained the call 2BV since its beginning. The club has had many addresses over the years in various parts of Sydney's Eastern Suburbs, the area which it serves. Today, the Club is well established in the Scout Hall in Vickery Avenue, Rose Bay, near the former flying boat base. They have a project afternoon on the first Saturday of the month and a meeting on the third Wednesday evening. An annual auction will be held in June. They operate 2 m and 70 cm repeaters at Paddington, with weekly nets. Contact Waverley via their web site vk2bv.org or Simon VK2AU 02 9328 7141.

Oxley Region ARC resumes meetings in February at the new SES Headquarters in Central Road, Port Macquarie. They hope to meet there for the monthly meeting on Saturday 7th February.

Taree and District ARC have their first meeting on 3rd February.

The Mid South Coast ARC has their first 2009 meeting on Saturday 14th February.

The Blue Mountains ARC has a node change on their repeater VK2RBM on ch 7050. The old node 6000 is heading for central Australia (Alice Springs) for a while. The new node number is 6366 and the new Echolink number is 63666 advises Erik VK2MAN. The first meeting of BMARC is set down for Friday evening, 6th February, with a possible talk on APRS. Their web site is www.bmarc.org

Well, the Coffs Harbour Expo put on by the **Mid North Coast ARG** is over for the year with planning no doubt under way for the next one. They have recently established a new 2 metre repeater in the Coffs area: VK2RCB on 146.750 with an access CTCSS tone of 123 Hz encode only. It serves the Coffs Harbour CBD and surrounding area. The web site www.mncarg.org

NSW WICEN will be at the Central Coast Field Day.

Northern Rivers has the Eden Creek Horse Enduro over the weekend 21 – 22 February and also the Paddle for Life Canoe Marathon over the ANZAC weeknd in April.

Contact WICEN via the Duty Operator 0408 397 217.

A 70 cm repeater commenced testing in Sydney's west at the start on the year: VK2RGW on 439.475 MHz advised Beth VK2AO. Email reports welcomed - beth.langley@bigpond.com

ARNSW

The AGM of the WIA NSW Division is scheduled to be held on Saturday 18th April 2009. The venue is yet to be confirmed, but if the fit out is finished, it will be in the new shed. A Council of nine is to be elected at the AGM and candidates are to be nominated and seconded by members and all must be financial at the time of nomination. The close of nominations and agenda items will be at 12 noon on Saturday 7th March at 63 Quarry Road, Dural with the Returning Officer, Peter VK2EMU. Nomination forms will be available on the ARNSW web site, by writing to P. O. Box 6044, Dural Delivery Centre NSW 2158, by telephone to the office phone 02 9651 1490, FAX 02 9651 1661 or by collection at the VK2WI site. VK2WI News will keep members informed.

By the end of 2008, work had started on the long awaited shed – barn – depot – really, it is just a storage facility. The earth works were carried out by Peter VK2JBP. Then the concrete slab was laid in two parts. The main shed slab is 24 x 9 metres. On the front eastern side is a 24 x 3 metre veranda slab. In mid January the erection of the shed kit was to commence. Some internal fit out will be taking place about now.

ARNSW has launched a new award advises Peter VK2EMU. It will be known as the VK2 Local Government Award. It will be for licensed amateurs and short wave listeners anywhere to contact or log amateurs in VK2. There are currently 152 local government areas in New South Wales extending from the Tweed Shire Council in the north to Bega Valley Shire Council in the south and Wentworth Shire Council in the west, as well as the large "unincorporated area" north of Broken Hill. Details were still being worked out as these notes were prepared. Peter advises the award will operate from the first of January 2009.

The operators of the VK2BWI slow Morse evening sessions took a well earned break from Christmas Day until the end of January. They always welcome assistance and if there are CW operators (anywhere) who would like to join the team, contact Ross VK2ER who has the Thursday session.

VK2WI

Some of the planned upgrades of the VK2WI facilities commenced late last year when a new circuit breaker switchboard was installed to replace the 35 year old wire fuse version. One of the members had spotted an almost new switchboard being aimed at a dump bin. He caught it on the way past and donated it to the Division. When the price list was checked, it had a trade value over $2.5k. What some people like to junk! Work is proceeding with refurbishing an AM transmitter to replace one of

the old AWA transmitters for one of the HF broadcast frequencies. Work is also underway, advises Mark VK2XOF, with new VK2RSY beacon transmitters for 2 m and 70 cm. Also one for 6 m, to free up the present transceiver unit currently being used for other duties.

VK2WI will conduct a Saturday evening news session on Saturday 7th February at 7.30 pm. This is for those attending the following day's Wyong field day. On the (Sunday) morning of the field day, the VK2WI 10 am transmission will depend on any broadcast team member/s not heading for Wyong being available. The Sunday evening broadcast will occur as normal.

During 2008 VK2WI News logged 6008 callbacks direct and via some relay stations. The break-up is 4362 in the morning and 1646 in the evening. The highest total for a day was 167 and the lowest 88. Highest morning was 120, lowest 60. The evening had a high of 40 and low of 22. VK2WI operates 12 frequencies in either session. The morning has 12 repeaters in the remote relay coverage and seven in the evening.

73 – Tim VK2ZTM.

VK3

Eastern Zone Amateur Radio Club Inc.

Chris Morley VK3CJK

Training

The Club held a training and assessment event in late November, with nine trainees attending both days of the event and some extra amateurs attempting assessments on the Sunday.

With so many candidates, Sunday was a long day, especially for the Assessor team!

The result was that eight candidates successfully completed the Foundation assessments; one was successful with the Regulations, one upgrade to Standard and one to Advanced.

We extend our thanks to all Assessors, Facilitators and helpers who assisted over the weekend. All enjoyed the barbeque lunch on both days.

Coming events

The February meeting will discuss techniques for use in hidden transmitter hunting, including construction of suitable small Yagi antennas for 144 MHz. This will be followed up in March with some actual transmitter hunts.

GippsTech2009

The Club is pleased to announce GippsTech2009. This year the main program will be held on Saturday July 11 and Sunday July 12. This event has a well-recognised reputation as the premier technical conference in VK, with its focus primarily on techniques applicable in the VHF, UHF and microwave bands, especially for weak-signal contacts. In addition to the Conference, a Partner's Tour will be conducted, together with an informal social gathering for dinner on Friday and a Conference Dinner on Saturday.

Copies of the Conference Proceedings document from 2008 will be available for sale during this year's event. Previous years' Proceedings are also available.

Anyone who presented at GippsTech2008 and has not yet forwarded their material for the Proceedings volume can expect to receive a reminder from VK3KAI very soon!

The conference is held in Churchill about 170 km east of Melbourne.

Further details can be found at the Eastern Zone Amateur Radio Club web site at http://www.vk3bez.org/

Call for papers

Amateurs (and others with material to contribute) are invited to submit titles and outlines for topics to be presented at GippsTech2009. Presentation slots can be brief (5 – 10 minutes) through to one hour. Anything longer – you will need to justify!!

Presentations can be formal or informal, or display. We use a lecture theatre for the formal (and semi-formal) presentations. Displays are open during coffee/tea breaks and after lunch. Potential presenters are welcome to contact the Chair of the Organising Committee, Peter VK3KAI (vk3kai@wia.org.au), direct for further information or to suggest a topic.

Geelong Radio and Electronics Society (GRES)

Rod Green VK3AYQ

As many readers of this magazine may be aware, in 1995 the GRES suffered a severe blow. The Barwon River flooded. A levee bank that was supposed to protect the club rooms from floods was breached and the club rooms were flooded to a depth of approximately two metres. They remained submerged for two days before the area could be drained, and, as can be imagined, the result was that the rooms had to be demolished. New premises were found and converted for use as a permanent meeting place.

Because of the rebuilding process some of the activities we engaged in were put on hold, but sadly other activities were forgotten. It is only in the last two years that we have again entered in field day competitions, a pastime that we once enjoyed on a regular basis. We also had barbeques and family days, and we will again be holding these during 2009 and beyond.

Something else that had been overlooked because of our rebuilding program was the award that we sponsored. We are now going to rectify this omission and once again sponsor the award the rules of which are as follows:

City by the Bay Award

A certificate will be issued by the Geelong Radio and Electronics Society to any licensed amateur radio operator who contacts the required number of

GRES members by radio.

The following conditions will apply to be eligible for the award.

Financial members of the GRES will be required to gain 60 points.

All other amateur radio operators will be required to gain 30 points.

Scoring is as follows:

Contacts with a GRES member fixed (home) station on 144 MHz and above	1 point
Contacts with a GRES member fixed (home) station below 144 MHz	2 points
Contacts with a GRES member where one or both stations are portable/ mobile:	
144 MHz and above	2 points
Below 144 MHz	4 points

The use of repeaters, satellites and IRLP are all eligible for scoring.

Any GRES member may only be contacted once.

Log book entries or QSL card confirmation is required by the award manager before a certificate can be issued.

To receive a certificate, forward all relevant documentation plus postage fee of $1.00 to:

Awards Manager
Geelong Radio and Electronics Society
PO Box 501
Belmont 3216

Members can often be found on 146.525 MHz Monday evenings and on 80 m Wednesday evenings. All members look forward to meeting up with you on air, and hope you enjoy making the required number of contacts with them to gain this award.

Geelong Amateur Radio Club – The GARC

Tony Collis VK3JGC

Spring VHF-UHF Field Day 2008

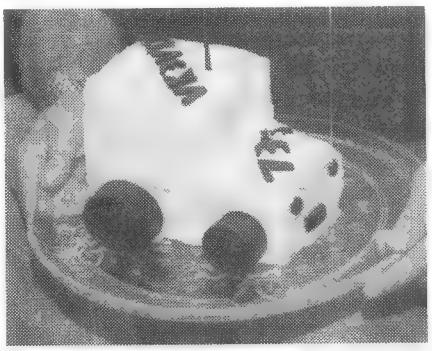
In spite of a self imposed handicap of dedicatedly consuming a quantity of red wine, VK3UHF, in the capable hands of Chas VK3PY and David VK3QM, once again acquired the top spot in the 24 hour multi operator class with a total of 6,012 points, putting them over 2000 points ahead of their nearest rival.

GARC in the Park

The Christmas party for the club organised by Jane VK3MJS and Vanessa VK3FUNY was originally planned for the Eastern Gardens in Geelong, where it actually started, but due to adverse weather conditions it finally ended up at the club house in Storrer Street.

Farewell party for Gavin VK3VTX

Gavin VK3VTX is moving to Flinders Island in the New Year and is in discussions with the ACMA on the VK7 callsign that will follow.



The 'mobile' cake supplied by Jenni VK3FGEN

In the meantime the GARC sprang a surprise farewell session for him at the club house on Friday 19th December.

Gavin will be missed by the club as a whole but in particular by those who frequent the VK3RGL repeater where you could almost certainly be guaranteed to hook up with him most days of the week, either from home or mobile.

Repeaters and Beacons

All the above are working correctly thanks to the tireless efforts of Ken VK3NW.

The BBQ outside the club house

Gavin receiving the cake from Jenni

News from

Christopher Comollattie VK4VKR
Email: vk4vkr@wia.org.au
qtc@wia.org.au

Happy New Year

Welcome to another year; time flies when you are having so much fun. Well this year for me is to catch up on what I did not complete last year. So like a host of other amateurs/hams my New Year's resolution is to finish the projects that I have started and not completed before I start another. One being a licence upgrade (have to find more time to study), place towers vertical so my antennas can perform a little better (some basic antenna principles involved there), have my APRS and weather station functional, build the retaining wall for the XYL..... I think you get the general idea, my 2009 is going to be very busy as my list of uncompleted jobs and projects has only just begun, that I have to finish.

One priority item is to contact ALL Queensland Amateur Radio Clubs so you can be known to the rest of our Australian and overseas readers, to thank you for purchasing and reading our Australian *Amateur Radio* magazine. This would be greatly assisted by dropping me an email to vk4vkr@wia.org.au with your email, stories and pictures for publication.

Sunshine Coast Amateur Radio Club

The December meeting of SCARC was the Annual Christmas Party. About 50 club members and guests enjoyed the evening with a barbecue cooked by David VK4JMR and Mike VK4YFL, who did a marvellous job keeping the food coming to feed the hungry gathering. The first Prize of $50 in the raffle was won by Geoff VK4GWC, and the second prize of a bottle of wine was won by Bill VK4WB.

During December the Repeater group put in many long hours perfecting the recent installation of new repeaters at Wilkes Knob near Maleny, and linked the 2 metre repeater (146.850) at this site with the 2 metre repeater at Noosa (146.825); this now gives coverage from the Gold Coast to Gympie. Due to an unfortunate failure of the 6 m repeater, urgent repairs were made, and it is now functioning again on 53.700 MHz, and it got quite a few calls from stations in VK1 and VK2 during the recent period of good propagation. This repeater has in recent months been relocated to Wilkes Knob giving an excellent coverage. A local net is held on this repeater every Friday evening by our President VK4NL, anyone wishing to join in would be most welcome.

Sailing Hams

No, not Christmas hams that were left out too long over the holidays and grew wings, the following ham operators are currently at sea and sending position data by WinLink which eventually ends up in the APRS.

VK4HBV David onboard Sahula northbound - last report 20 December 2008 1406 UTC 07.45.00N 98.23.00E, Ao Chalong, 17 km SW Phuket, Thailand. Xmas/New Year at Phang Nga Bay. View sailing blog at http://www.sailblogs.com/member/sahula/

VK4FUU Ashley and Brenda onboard Ashymakaihken - last report 18 December 2008 0553 UTC 27.56.87S 153.25.45E, The Spit, Southport, QLD Gold Coast. Heading south.

Some people get to have all the fun!

Townsville Amateur Radio Club

TARC has an organised February:

TARC Management Meeting: Tue 3rd Feb from 7.30 pm at SES HQ Green Street, West End

TARC Project Night: Tue 10th Feb from 7.30 pm at SES HQ Green Street West End

TARC Social Evening: Tue 17th Feb from 7.0 pm at SES HQ Green Street, West End

Ann Renton Memorial Ladies Net Tue 24th Feb from 7.30pm on Townsville VHF Repeater.

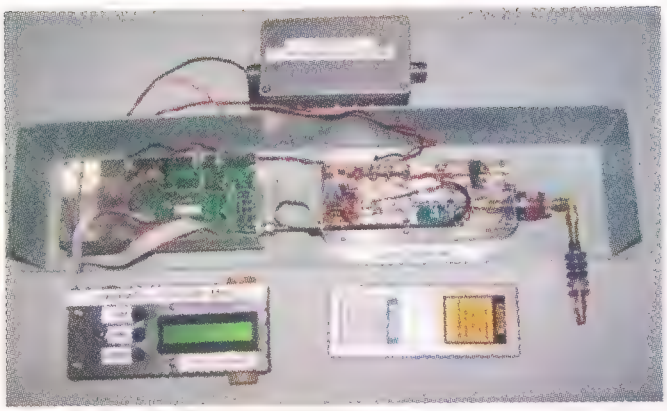
Redcliffe and Districts Radio Club Inc

RADRC is keeping up with fire safety, with the work of Danny Rockett VK4FDHR and his employer London Fire and Safe Pty Ltd servicing the club fire extinguishers and donating a fire blanket as well as a CO_2 extinguisher. Have you checked your fire extinguisher lately or will you check it when it is too late?

If you wish to read a very technical and informative newsletter, contact Gerry (gerardb_adsl@bigpond.com) to be added to the mailing list or drop in on one of their club meetings, every Monday 1930 (local), corner Klingner Rd and Macfarlane St, Kippa Ring, or join in on one of the club nets Sunday evenings at 1900 K 146.925 MHz Redcliffe repeater VK4RRC and 1945 K 80m 3.618 MHz +/- QRM, VK4RC Net control.

Rockhampton and District Amateur Radio Club

The RADAR club is building a 23 cm beacon, with a show and tell at the December meeting and progress report. More details will be provided as the project continues. Many thanks go to Marcel VK4TMH and Frank VK4FLR for their fine work, time and effort.



23 cm beacon for VK4RAR (Rockhampton)

Mother Nature's power at an extreme

Summer season = bad weather

Hot summer days and thunder storms with damaging winds can sometime be an issue, remember to be safe with your antennas and towers, but even the (so called) best structures can be laid over by mother nature.

Thank you to the following for submissions for this month's VK4 AR column: Mike Little VK4YFL, Gavin Reibelt VK4ZZ, Gerry Bahre VK4UGB and Clive Sait VK4ACC. Would you like to see your name here?

VK5

Adelaide Hills Amateur Radio Society

Christine Taylor VK5CTY

Our year ended with the very successful Buy and Sell in the new venue, as reported in December, and an almost equally successful construction night.

This year we made van der Graaf high voltage generators!

As usual, Graham VK5ZFZ brought along a large collection of small components and some very clear explanation sheets and everyone set to on the task.

The photos illustrate the concentration required to make the van der Graaf generators and great was the joy when they were tested and sparks were seen. Lyndon VK5STC was the first to have his generator tested, and Elissa, the youngest member present, also had hers tested, along with many others. They worked! The photographer complained it was very difficult to actually photograph the spark!

The end of year dinner this year was a luncheon at the Mount Osmond Golf Course Clubrooms. The view from these

A group of members really concentrating. L-R: Trevor VK5TAW, Mark VK5AVQ and Ron VK5RV.

A completed van der Graaf generator

clubrooms is magic and added to the pleasure.

As well as the usual bottles of wine and boxes of chocolates handed out to the lucky ticket holders, two double dinner passes were given by the Mount Osmond management.

In January we will hold a picnic at the same venue as last year but normal meetings on the third Thursday of the month will begin again in February, at the Belair Community Centre. For more information please contact John VK5EMI or David VK5AMK, QTHR the callbook and telephone book.

Right: One of the lucky dinner prize recipients presented by the manager at the AHARS Christmas lunch

VK6

Keith Bainbridge VK6XH

As we start another year I would like to wish all Amateurs, SWLs and their families a Happy and Prosperous New Year for 2009.

As we get older the years seem to fly by, and suddenly we find we qualify as "old timers" with 25 years licensed and what do we have to show for it?

Well in VK6 we are lucky I believe as we are the targets still for overseas amateurs chasing the elusive Zone 29. Really Zone 29 should not be that hard to work on HF as there are many amateurs here in WA and that brings me to the point of this rambling.

I would like ALL VK6 amateurs to make the effort and get on air more often in 2009. There are many licensees here who I know have not been on air for many years so what can we do to remedy that in 2009?

I suggest the clubs in WA contact those amateurs they know have been inactive and try to get them back into the hobby and into the WIA ranks once again.

This is a time in the history of our hobby when we really need to swell the ranks. There are new amateurs getting their callsigns weekly I know, but what of those who have drifted away.

We need action in this area of the hobby and I believe clubs are ideally positioned to get this happening.

As I mentioned in the last column, I went down to Albany and met up for dinner with members of the Southern Electronics Group. It was a memorable feed at the Earl of Spencer, famous for their Pie and a Pint, it is huge!. Anyway the group is coming along with the re-installation of VK6RAL, the Albany two metre repeater, well under way and awaiting the cure of a few teething problems caused by co-sited equipment. The group has no formal meetings as such just on air get-togethers on a Wednesday night and dinner gatherings when they can be arranged. It was great to catch up with some old faces.

On the subject of new or revamped repeaters I believe the Bunbury area club is progressing well with the installation of two new Yaesu repeaters purchased recently with remaining club funds to replace the old WA Repeater Group machines on 2 m and 70 cm in the Bunbury area. As more info becomes available I will keep you all up to date.

The Northern Corridor Radio Group is also moving to replace its ailing 70 cm repeater with a new one, more will also follow on that as well and a new group in the Geraldton area is also hoping to have a new repeater on air soon.

Repeaters are the usual introduction new hams get to the hobby when first licensed so we need to have a good reliable system in place, and it is good to see the clubs helping out to provide them outside of the metro area.

Now a report from the North West

The amateur numbers dwindled by one last month with Fred VK6UMH relocating back south. Unfortunately this is the nature of the transient work force up here in the Pilbara. Fred was here for the Cape Lambert upgrade and was especially active in the evenings on his HT from the construction camp, talking locally and overseas on IRLP via our local repeater VK6RWR.

Active amateurs now hold steady at 4 in the Wickham, Roebourne and Karratha area with a few inactive operators still in the area.

Tropospheric ducting has been at a low for the last few months with no stations heard from Indonesia on the input or output of our local repeater since September. But I am sure this will not be the norm as we approach the

summer months. In extreme cases, we have to shut the repeater off for the day. So if you happen to be up this way and the VK6RWR repeater is off the air, it should only be for the day.

It is interesting to note that the Exmouth repeater VK6REX has not been heard in the Karratha and Wickam area for a couple years due to ducting. This was a yearly ritual but seems to be a non event over that last couple of years.

One last note, the VK6REX and VK6RWR repeaters have now been licensed for another three years to the end of 2011. Falling short of funds in the remnants of the old North West club account, a special thanks goes out to VK6ARW, VK6YA, VK6FABG, VK6BHY and yours truly VK6HV for the generous donations to keep these last two remaining coastal Pilbara repeaters on air.

73s

Steve VK6HV

Thanks Steve for an interesting report from up north, Grey Nomads take note of the repeaters available for your use.

VKCC WA branch!

I have been approached by Mirek VK6DXI representing members of the VKCC, the VK Contest Club, WA branch regarding the allocation of 2 x 1 callsigns for contest operation only.

Calls such as VK6A and VK6B and the like are at present not available to amateurs for contest operation, unlike just about every major country in the world.

He feels strongly, as do many of us, that the allocation of such callsigns to the contest groups and serious, recognised contesters in the hobby would be a huge bonus in bringing us into contention with the rest of the world. You only have to look at the Contest results list to see the 2x1 calls leading the charge.

As the allocation of callsigns is soon to be a WIA service, the many contesters among us would request that priority is given to achieving this allocation. After all there will not be 26 contest stations in every State so there will not be a huge demand, just a practical advantage to those taking part. Fingers crossed.

Finally the NCRG has just installed a new three element 40 metre beam so look out for big signals on the news re-broadcast in future (and in the contests of course!).

Albany repeater

On Friday January 2 Wes VK6WX, Bevan VK6VX and myself (VK6XH) headed down to Albany and installed the VK6RAL 70 cm repeater at Mt Clarence.

The installation went quite smoothly and the repeater is now on air.

The existing equipment was rearranged in the rack cabinet, then the KL450 repeater and 70 cm antenna duplexer was fitted in the rack.

Also installed was a 2 m/70 cm diplexer which allows both repeaters to operate off a single dual band co-linear antenna on the Mt Clarence tower.

Both the 2 m and 70 cm repeaters have been interfaced so they can be linked via a DTMF command if required.

Progress is being made to upgrade the Mt Barker 2 m repeater and this will be linked full time to the Albany 70 cm repeater.

The repeater frequency is 438.725 MHz (-5.00 MHz offset).

Reports of coverage for the new repeater are welcome.

73 from me and have a safe and DX plentiful New Year

Keith VK6XH

VK8

Peter Blackadder VK8HPB
vk8hpb@wia.org.au

Well I guess it is time I put fingers to the keyboard to tell the rest of Australia what is happening in VK8 land. At the moment it is hot dripping weather with an occasional storm to make things even stickier. The aircon makes it all that much more bearable; better crank it down another notch.

So here is a bit of news that has been happening around VK8 lately.

Assessor Training

November 8-9 Fred Swainston visited Darwin to conduct Assessor training for a number of intrepid Darwin Amateur Radio Club and Alice Springs ARC members. Saturday and Sunday mornings saw Mark VK8MS, Richie VK8RR, Spud VK8ZWM, Patrick VK8ZMX, Greg VK8HLF, Terry VK8TA, Gary VK8BN, Ron VK8NRI and Geoff VK8LDR from Alice Springs sit down and learn how to assess potential candidates sitting for their respective licences.

All now are fully fledged Assessors and Learning Facilitators and are keen to continue to hone their new found skills.

Yours truly missed out as I had to fly to Sydney in the wee hours of Saturday.

Many thanks go to Fred Swainston for taking the time to come to Darwin and to present the course.

Christmas Dinner

November 14th saw members of the Darwin Amateur Radio Club gather at the Free Spirit Resort for Christmas dinner.

A great night was had by all and my thanks to Spud VK8ZWM for taking over organising it at such short notice. I believe the venue chosen, although good, presented some problems on the night with a non-stop band playing LOUD music throughout the night, dampening the event significantly. The members are now all very good lip readers.

SEANET 2008 at Sabah, Malaysia

The DARC sent a large contingent to Sabah for this year's SEANET conference. Attending were Gary VK8GW and his wife Janice, Mark VK8MS and his wife Linda, Richie VK8RR and his wife Paula, and Andrew VK8AH (9M2XX) and his XYL attended from Singapore, where he is now working.

I believe it was good conference with Korea and China putting bids to hold it in their respective countries.

News from

Mark VK8MS turns out to be a very good karaoke singer and led the Malaysians in a sing-along; I also believe he leaves John Travolta for dead in the dancing. Well done Mark.

WICEN

WICEN (NT) applied for and received a grant from Emergency Management Australia. With the money received, WICEN purchased a portable repeater, antenna and a Clark push up mast.

The repeater has been running in test mode at the residence of Peter VK8HPB for the past couple of weeks to "bed it in" and it has operated successfully, albeit with some modifications to be done to make it a little better.

This repeater will be used by WICEN in the event of any emergency.

AGM

Monday 1st December saw the DARC have its annual general meeting where all positions were declared vacant. The following were elected to the positions to lead the club into the next year.

President Peter Blackadder VK8HPB
Vice President Greg Ryan VK8HLF
Secretary Ron Innes VK8NRI
Treasurer Mark VK8MS
Committee Patrick Daley VK8ZMX
John Goda VK8HF
Gary Gibson VK8BN
Station Manager Richie Chappel VK8RR

Lightning Project

DARC has been asked to participate in an experiment to help spot lightning strikes. Emeritus Professor Richard L Dowden from Dunedin NZ visited the club and asked if we could assist him in his project. The management committee have thought this a good idea and agreed to assist. Details are still to be finalised but we should be operational after Christmas.

VK7

Justin Giles-Clark VK7TW
Email: vk7tw@wia.org.au
Regional Web Site: reast.asn.au

Central Highlands of Tasmania Hamfest

The Hamfest took place on Saturday 6th December up in the excellent Miena Community Hall facilities. The weather was great and the estimate was well over 150 attendees. The lucky door prize of a Yaesu 70 cm hand-held donated by Vertex Standard was won by Garry VK2UTC, the brother of John VK1CJ who also attended. There was great Hamfest pricing and I understand that traders were very happy with sales. Much pre-loved gear also changed hands. It took many people to make this event the success it was and thanks to all involved especially the coordinator Dave VK7KDO. I was told that there may even be a new XYL call sign from the Great Lake in the near future.

MC - Brian VK7RR (with Mic) & Hamfest Coordinator Dave VK7KDO with lucky door prize draw help from the Nicholas clan.

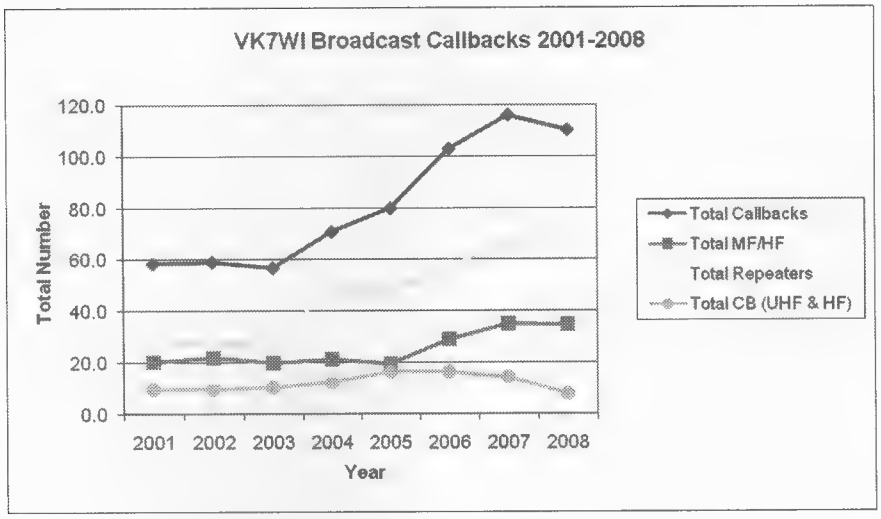
Records Tumbling

On 24th November 2008, Rex VK7MO at Green Hills near Stanley with APD receiver and Joe VK7JG and Alvin VK7NDQ on Mt Horror with Rex's new light transmitter, completed a one way 209 km optical cloud bounce contact using WSJT. Congratulations to all involved.

There has been much activity from VK7 using the Weak Signal Propagation Reporter (WSPR) application from Joe Taylor K1JT. Bob VK7KRW, on Friday 31 Oct, had a two way contact with Richard N2JR in Virginia, USA on the 80 m band, with a distance of 16300 km running just two watts. Then Dick VK7DIK made a contact with Joe K1JT over a distance of 23351 km on 40 m using just five watts. Congratulations to all involved – DX using QRP – very impressive!

VK7 Regional News Broadcast Statistics

The 2008 VK7 Regional News broadcast year had good and bad news. In summary there was a 1% increase in repeater callbacks, a 1% decrease in MF and HF callbacks and a 46% decrease in HF & UHF CB callbacks. On the surface this looks bad; however this could be a result of the many new Foundation licensees who are now on the amateur bands. Total callbacks for 2008 have dropped 5% over 2007 to an average of 110.3 callbacks per week, which resulted in a total of 5623 callbacks in 2008. More



Total VK7 Regional News Callbacks from 2001-2008

detail can be found at: http://reast.asn.au/archive.php#stats

North West Tasmanian Amateur Radio Interest Group

Congratulations to Brian VK7FAYE and John VK7FOXX for gaining their Foundation licences. Welcome to the airwaves.

Northern Tasmania Amateur Radio Club

In November there was a great presentation from Ian Hart from the Tasmania Ambulance Service on technology and methods of communications, and a fascinating insight into the Service's response to the Beaconsfield Mine accident of 2006. Thank you, Ian. Congratulations and welcome to Kerry VK7FKEK the North's latest Foundation licensee. NTARC's December meeting was a good social affair at Myrtle Park making for a good finish to 2008.

Radio and Electronics Association of Southern Tasmania

Congratulations to Michael VK7FROG, Ashby VK7FASH, Scott VK7FRRT, Ross VK7FROS and Paul VK7FPAH who have all gained their Foundation licences. Welcome to the airwaves. ATV is alive and well in Hobart with each Wednesday night featuring video presentations from a wide variety of sources. UHF TV: 444.250 MHz, just below SBS, with a directional antenna pointed toward the Queen's Domain should get you a signal. REAST's December presentation was on Digital and DX ATV by Jack VK2TRF/7. He gave a fascinating talk, both live and out via ATV, on his vast exploits with DX ATV and his Digital ATV experimentation on 23 cm. Thanks Jack and congratulations to you and your team in VK2 for these outstanding records. IRLP Node 6739 is back on air on VK7RAD/RHT thanks to Ben VK7BEN.

Jack VK2TRF and his Digital ATV Presentation

Silent Key

Leon Durkin VK7JP "Durk"

Aged 83, Leon Durkin, died on December 5. Husband of Trix (dec) and father of Vaughan, Kim and Leonie, Leon was a life member of the Burnie Fire Brigade and the Wireless Institute of Australia. Ken VK7KH recollects the Radio Club on the North West coast where they used to meet at Syd Medford's garage in Mount Street in Burnie and Leon was an active member. Leon was responsible for the installation of mobile radios in the Burnie Fire Brigade vehicles and Ken remembers him trying out different mobile whips for their vehicles. He was very successful in this and Leon was given a Life membership of the Fire Brigade. He worked for the PMG department just behind the Burnie Post Office and always wore a grey dustcoat and being a small man was easily recognised. Those were the days of Doug Fisher VK7AB and Dr Ian Pearson and of course Syd VK7SF in the old AM days which Ken well remembers.

Vale Leon.

Ken VK7KH and Winston VK7EM

A new

Amateur Radio Wiki

has been started and can be found at

http://www.amateur-radio-wiki.net

We are looking for writers of articles suitable for this website.

The intention is that it will become an online encyclopaedia for hams.

Please log into the site, register and start writing!

Tim Roberts VK4YEH QTHR.

DX - News & Views

John Bazeley VK4OQ
P.O. Box 7665, Toowoomba Mail Centre, QLD 4352.
Email john.bazley@bigpond.com

Well I wonder what the next 12 months has to offer in the way of DX? How many of the 'top most wanted' list will be activated? Some we already have had advance notice – Desecho Island and Marion Island. Other DXpeditions already planned and publicised include for January: XU, A35, CN8, TU, ZD8, S2, E44, TS7, C5, 8Q7, 6W, HK0/SA. February: 3D2, T2. March: C6, VK9L, YJ, J6. Undoubtedly there will be others as time progresses.

The other controversial 'discussion' is how different will conditions be this time next year? Let us hope we are in for a pleasant surprise! But there are times when conditions are a lot better than we think! This was well and truly illustrated during the recent CQWW CW Contest at the end of November when conditions appeared to be very poor but with Contest activity the amount of DX that was worked was extraordinary. Even 15 and 10 metres opened up. I have mentioned before that we all tend to 'forget' the IARU Beacon Service, which is there 24 hours a day, 7 days a week, and is an excellent tool for 'seeing' what bands are open NOW. Often the beacons will be really strong from, say JA, but not a single JA station on the band! I guess everyone waiting for everyone else to call CQ!

So here is a little information on some of the activity that we can expect in the next few weeks.

S2: Korea DX Club members Kim 6K5YPW, Kang DS2AGH, Lee DS2BGV, Kim HL3QP, Choi HL5FUA and Yoon 6K2AVL will be active from Dhaka, Bangladesh on 7-12 March. They plan to operate (callsign TBA) on 160-10 metres CW, SSB and digital modes, with three amplifiers, verticals and beam antennas. Suggested frequencies are:

Band	CW	SSB	Digi
160 m	1822	-	-
80 m	3515	3795	-
40 m	7015	7095	-
30 m	10115	-	-
20 m	14015	14195	14082
17 m	18075	18130	21082
15 m	21015	21295	-
12 m	24895	24950	-
10 m	28015	28460	28100

QSL via HL5FUA. Logs will be available at http://dxpedition.co.kr

Good to hear again from Bill VK4FW regarding the forthcoming DXpedition to VK9LA: March 23rd 2009 to April 3rd 2009.

After much negotiation, we have now secured a second operating site on the island. This has meant that we are now taking extra operators and extra equipment and will also have an extra day for the operation.

The full list of operators is: K5YY, N2OO, N2OZ, SQ8X, SQ9DIE, SV2KBS(YL), VK1TX, VK3HJ, VK3QB, VK4IO, VK4VCH (YL), VK5CP, VK5PO, VU3RSB, W5SL and myself VK4FW. This well balanced team will keep seven complete stations active on SSB, CW and RTTY. We will operate on all bands from 6 m through to 160 m.

Antennas consist of mono band Yagis for 6, 10, 15 and 20 m bands, low band verticals, WARC Yagi, wire arrays for the low bands and a special antenna for 160 m. The total weight of all the equipment will exceed 2.5 tonnes and will cost some $5000. We would certainly appreciate donations to help offset this cost, which can be made on line at the web site: http://www.odxg.org/vk9la.htm

April 1st has been set up as the special night to make sure that all VK, ZL and general Pacific stations get into the log on 80 m. The time and frequencies are CW 3.507 at 08.45 Z followed by 3.555 at 09.30 Z.

Canadian amateurs will be allowed to use four special prefixes between 1st January and the 28th February: VA can use CF, VE can use CG, VO can use CH, VY can use CI. This is to commemorate Galileo's first use of an optical telescope and to promote the International Year of Astronomy.

Jim ND9M is now back on Diego Garcia (AF-006), Chagos Islands until April 2009. He was active as VQ98JC through to the end of 2008, after that he will use VQ9JC. Expect him to be QRV in his spare time, typically at 1200-16.30 UTC (from Sunday to Thursday) and at 1200-17.30 UTC (Fridays and Saturdays). Occasional overnight operating will allow him to remain QRV until 0100 UTC. QSL via ND9M.

The TC-Special Wireless Activity Team will be active from a number of lighthouses around Istanbul as follows:

- 17-18 January TC2SLH Sile (TUR-046)
- 24-25 January TC2ALH Anadolu (TUR-014)
- 21-22 February TC1ALH Ahirkapi (TUR-056)
- 21-22 March TC1RLH Rumeli/Turkeli (TUR-053)
- 04-05 April TC2FLH Fenerbahce (TUR-021)

Stations contacting four or more lighthouses will receive the "Istanbul Lighthouses On The Air Award" (details to be announced on http://tcswat.tripod.com/)

A log search for the recent **A5100A** operation from Bhutan is now up and running at http://www.f5lmj.net/a5100a.htm, along with a photo gallery, MP3 files and other information.

QSLs for ZL7/SP5EAQ. Jacek SP5EAQ, who operated as ZL7/SP5EAQ from the Chatham Islands back in October 2007, states that if you are still waiting for a direct card, please contact him (e-mail address at qrz.com), as it looks like a few envelopes have got "lost" at his local post office.

Starting February 22nd, look for **Jan DL7JAN**, who will be QRV from Praslin Island (AF-024), Seychelles. He will be operating as S79JF on 7 through 28 MHz on CW, SSB, RTTY and possibly PSK31 until March 6th. QSL via DL7JAN either direct or via the bureau.

Nick 5N/LZ1QK has been QRV from near the capital Lagos since early October. Activity so far has been on CW only on 7 through 28 MHz. He is there on a work assignment and went home to Bulgaria for the Christmas holidays. He is expected back in Nigeria around the 1st or 2nd of January. LZ1QK told George W8UVZ that he has "a pretty good low band antenna" but is only running 100 watts. He has tried 80 metres but has

only had luck with EU so far. When Nick takes his Christmas break back home he will be getting an Acom-1000 amplifier, thanks to the help of LZ1JK. Also he will work on a new antenna for 80 and 160 metres. QSL cards for 5N/LZ1QK go via QSL Manager LZ1CL, Vassil Shatarov, P.O. Box 185, Plovdiv 4000, BULGARIA.

Sigi DL7DF will be on holiday with his XYL on Zanzibar Island (AF- 032), Tanzania from February 3rd to 13th. He will be QRV as 5H1DF on 1.8 through 28 MHz on CW, SSB, RTTY and SSTV. He will be running an amplifier and an 18 metre high low band vertical. He will also have available an R7 vertical. He has a Web page at www.dl7df.com/5h/index.html QSL via DL7DF.

Finally some information on those readers particularly interested in IOTA:

REFERENCE UPDATE of the 2007 Edition of the IOTA Directory

AF-104	7X	Mediterranean Sea Coast East group (Algeria)
AS-185	XV	Gulf of Tongking South group (Vietnam)
AS-186	YK	Syria group (Syria)
AS-193	HZ	Farasan Islands (Saudi Arabia)
AS-199	VU	Andhra Pradesh State South group (India)
NA-229	VY0	Nunavut (Hudson Bay - Quebec Coast) North East group (Canada)
NA-234	KL	Islands of Four Mountains (Alaska)
NA-243	OX	Greenland's Coastal Islands North East (Greenland)
OC-283	P2	Tauu Islands (aka Takuu Islands) (Papua New Guinea)
OC-284	P2	Nukumanu Islands (Papua New Guinea)
SA-098	OA6	Arequipa/Moquegua/Tacna Department group (Peru)

Good luck in the pile-ups.

Special thanks to the authors of *The Daily DX* (W3UR), 425 DX News (I1JQJ) and *QRZ.DX* for information appearing in this month's *DX News & Views*. For interested readers you can obtain from W3UR a free two week trial of *The Daily DX* from www.dailydx.com/trial.htm

Spotlight On SWLing

Robin L. Harwood VK7RH

Sleep in Heavenly Peace? Forget it!

Another year has arrived and again peace is so very far away. As I am compiling this, Israel and the Hamas terrorist group are again at each other's throats in Gaza. There are thousands of civilian casualties on both sides and there is unwillingness to cease hostile operations, despite repeated calls from the United Nations Security Council. This action was launched just days prior to the inauguration of Barack Obama as the 44th President of the United States of America. I have noted a marked increase in those odd numbers stations, allegedly run by the Israeli Mossad after being almost silent for many weeks. Some of these transmit on channels adjacent to the 40 and 80-metre amateur allocations and identify with three letter callsigns such as Charlie India Oscar or Alpha Mike Zulu, usually with a computer-generated female voice.

MI5 or 6 also employed these numbers stations to send traffic to agents throughout the world but they have significantly reduced their operating hours, as I believe that better platforms now exist to disseminate traffic than shortwave radios. The Cubans still send numbers traffic to agents, usually on CW. A very strong signal was easily heard here in Australia for many years; operating between 6870 and 6950 around 1300 Z. Numbers stations are now used by narcotics traffickers and mimic the Spooks but are easily tracked by law enforcement authorities.

As predicted, the Austrian Radio closed their foreign language section yet did not vacate shortwave. They are now relaying the domestic networks in German, similar to what Radio Australia does with Radio National. Lithuania also unexpectedly closed down their shortwave senders. The latter has been relaying Hobby broadcasters plus Teheran but now has ceased broadcasting over HF. The VOA in Washington also stopped programming in Ukrainian on the same date, just as another crisis erupted between Russia and Ukraine over gas supplies.

As I have been commenting, confusion reigns supreme with regard to digital broadcasting. The Americans opted for Ubiquity, a standard only available in the States. Known simply as IBOC, this application was designed both for the AM and FM broadcasting allocations. Now doubts have emerged that it is viable commercially and over 50 stations turned off IBOC on the MW band around Christmas with more expected to join them. Apparently the financial meltdown has hit hard into sales of commercial receiver models.

Also DRM has not taken off as the proponents would have wished. Receivers are far too pricey and there are too few broadcasters using this mode. The BBC World Service and DW have opted for a joint DRM platform for English programming from a sender in the UK. There are too few people listening to DRM to make it feasible.

The other Digital platform, known as DAB1, is primarily available only in the UK, whilst the rest of Europe has apparently switched it off. This is the standard that is going to be employed here in Australia as from midyear.

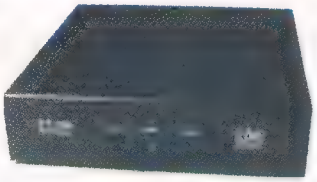
Unlike here in Australia, the Americans are going to switch off their analogue TV signals in mid February. Millions of Americans are blissfully unaware that they will require a digital converter and have ignored coupons to buy digital decoders. In Australia, we will be phasing out analogue by 2013.

Well that is all for now. Take care and good listening!

Robin L. Harwood VK7RH.

NEW LDG KT100 Autotuner to suit all Kenwood transceivers

Flexible, low cost, easy to use and just right for your Kenwood transceiver, the KT-100 is the latest in a long line of automatic tuners from LDG that fit in right were you need them the most. And like all LDG products, the KT-100 comes with a two-year, fully transferable warranty. *Order yours today.*



Coming soon
LDG Z817 Autotuner to suit Yaesu 817

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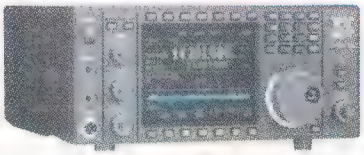
OMNI-VII is the first truly Net-Ready ham transceiver.

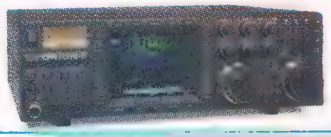


• No PC required at the rig to operate remote! • Delivers live receive AND transmit operation from anywhere in the world from wideband Internet access! • A simple GUI written for the OMNI-VII downloadable free or latest GUI source code can be downloaded to DIY • Three built-in filters at 20 kHz, 6 kHz, and 2.5 kHz Optional Collins mechanical filters at 500 Hz and 300 Hz. • Filters are auto or manual. • 37 built-in DSP filters. • Transmit 6 - 160 metres, 100 watts Receive from 500 kHz -30 MHz continuous plus 48 to 54 MHz. • SSB, CW, AM, FM, Digital modes. • 17 selectable transmit bandwidths. • RX EQ and TX EQ in 6 db/octave filters selectable in 1-dB steps • DSP Noise Reduction, auto or manual notch. • QSK CW has adjustable rise and decay times, hard or soft key options.

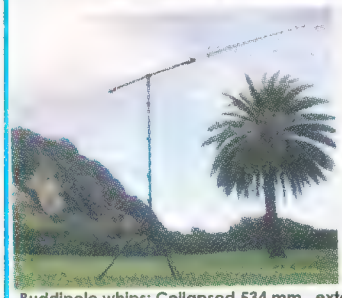
Orion II

First independent test data on ORION II, released 16 April 2006: "Noted receiver guru Rob Sherwood NC0B of Sherwood Engineering now ranks the ORION II as #1 of all HF amateur radio transceivers ever tested for close-in dynamic range, dating back to the 1970's. The original ORION is now listed as #2 overall to the ORION II ".

...America's Best! TEN-TEC



BUDDIPOLE DELUXE



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Low band (80 m) coils available

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Jupiter

New for 2008! The Jupiter now features a new easy-to-read reversible blue/grey LCD screen and black case to cosmetically match other pieces in the Ten-Tec transceiver and accessory line. Thousands of Jupiter transceivers are in use worldwide and are renowned for their terrific audio quality and superb receiver performance.

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Mean Well PB 360P-12 battery charger

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Christine Taylor VK5CTY

We greet a New Year

ALARA hopes you all have a great Festive Season and are bright-eyed and bushy–tailed ready for all the activities of a New Year.

2008 ended with some special ALARA lunches. The Gold Coast had a gathering which resulted in the setting up of a new conference station on EchoLink. A number of the YLs wanted to 'talk' to each other but were more comfortable with a computer headset than with a microphone attached to the radio.

The station can be found under the name of ALARA or on node number 286905 through IRLP. Remember you have to be a registered amateur to use EchoLink or IRLP and you have to be 'recognised' by sending your licence information through the internet.

This is the information sent from Pam VK4PTO about their Christmas party and the conference server:

At our Gold Coast Club Xmas Party last night, where 9 ALARA members were present, I was presented with a Certificate and a key to "ALARA EchoLink Conference Server" by Paul Van der Weegen VK2EX.

Paul and his XYL Sheralyn VK2LUV created this Conference Server for the ladies of the ALARA group, to have control of and use as we see fit, hoping that it becomes the meeting place for YLs everywhere, and promotes the involvement of ladies into this hobby.

We have photos of the VK3 girls and the VK5 group celebrating. Christmas is a time to get together and enjoy the friendship we share.

In VK5 our YLs were again involved with the Scouting activities

Through SCRAG the communication section of Scouts in VK5 Jenny VK5FJAY and Jeanne VK5JQ found themselves at Morgan in December, operating the radios for the "Super Splash" arranged to give Scouts some water sport experience. The YLs handed out radios and batteries and kept in communication with the various groups.

Weather wise, it was sprinkling on and off but not enough to put a dampener on the fun. Jeanne and her OM Keith VK5OQ set up the station in the local caravan park on the Saturday. Jenny and her OM Kevin VK5AKZ came up early on Sunday morning and helped out during the day, staying to pack up at the end.

A good time was had by all.

The VK3 November Lunch was actually their Christmas celebration lunch.
Back Row. L-R: Jenny VK5ANW, Pam YL of VK3AMN, Muriel, Margaret from the WIA, Susan VK3ANZ, MicheleVK3FEAT, Susan VK3FXXX, Michline VK3FMGE, with OM Peter VK3KG.
Front Row. L-R: Margaret VK3FMAB, Pam VK3NK, Pat VK3OZ, Diane VK3FDIZ, Helen YL of OM VK3DLR, Jean VK3VIP, Cristina VK3FCRS, and Wendy, Muriel's sister.

The VK5 Christmas group. Jean at this end on the right of the table wearing her Christmas hat.

Tina's patchwork quilt

YL International Meet in Australia in 2012

When Christine VK5CTY recently went to the YL International Meeting in Africa she was asked to convince ALARA to host a YL International Meeting in Australia. She brought the idea back with her and we had a meeting of VK5 girls to see if there was any support for the idea. We took the idea to the committee and after many emails with everyone's shared ideas the committee has decided to host the YL International Meeting in 2012 in Adelaide. It was also decided that the 2011 ALARAMEET would be postponed until 2014 to allow more to attend the YL International Meeting.

Tina VK5TMC has agreed to coordinate the Meet. Current thinking is that the meet would be at the end of April or beginning of May 2012. This would be late autumn and usually quite nice weather. The Meet will be centred on Adelaide with as little overlap of the Murray Bridge ALARAMEET as possible. Tina will try to arrange trips to the Barossa Valley, Hahndorf, and for the international girls we would visit a wildlife park. For a venue, the idea is to try to stay in the Glenelg area to offer a variety of accommodation, 5 stars to caravanning. Every attempt will be made to keep the Meet affordable to allow everyone a chance to meet the international girls.

There will be an optional trip at the end of the MEET to go to Darwin on the Ghan with a stop in Alice Springs to go out to Uluru. This will be a fairly expensive trip, probably in the order of $4000 to $5000 each but we hope some of the VKs will take up the offer, along with some of the International visitors. The train representatives have been very helpful and if we got 48 people to do this we would have our own lounge carriage and dining carriage.

Tina will be attending the YL International Meet in 2010 in Munich. This will enable her to see what is done and to see a bit of Europe. Tina will also be at the Dayton Hamvention this May to promote our Meet.

The committee would like feedback on our decisions. You can email Tina at: vk5tmc@optusnet.com.au, speak to any committee member, or if you want the message passed on to every committee member email Jenny VK5ANW at wolfenden_p@bigpond.com

Tina looks forward to seeing many of you at our 2012 YL International Meet.

Tasmanian ALARAMEET postscript

Many of you sent pieces of fabric to me to make a quilt that was part of the Special Effort. I thought you might like to see the end product. This was the first quilt I had ever finished. I am still working on the first quilt I started but it takes quite a while to hand-stitch a king size quilt, three years and stitching. I was pleased with the end result and my OM said it was too nice to give away! Kathy the ZL who won it had just redecorated and said she had a perfect place to hang it.

Tina Clogg VK5TMC

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This is what Jason Reilly VK7ZJA had to say Quangsheng in AR in November '07

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Extra Battery (1500 mAh)	$17
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Peter Paradigm VK2TXT
email: coordinator@amsat-vk.org

AMSAT-Australia or AMSAT-VK?

It would seem that there is still a little confusion regarding how AMSAT is represented in Australia, and how membership to AMSAT-Australia works. I believe that this has come about due to the amalgamation of AMSAT-Australia and the Ozsatgroup.

AMSAT is represented in Australia by the AMSAT Coordinator, as a member of the Technical Advisory Committee (TAC) of the Wireless Institute of Australia. The appointment of the coordinator is made by the Board of the WIA on the recommendation of the existing members of the TAC.

When you join AMSAT-Australia, you are actually becoming a member of the AMSAT-VK Yahoo group. All of the activities of AMSAT in Australia are conducted via this Yahoo group. This is the same way in which the former Ozsatgroup was run.

Prior to the amalgamation of AMSAT-Australia and the Ozsatgroup, membership of AMSAT-Australia entailed joining the AMSAT-Australia mailing list, and more recently an email list. From July of 2008, the Ozsatgroup and the old AMSAT-Australia list were merged into a single Yahoo group called AMSAT-VK.

In essence, the way in which AMSAT-Australia operates has not changed since 1986, since the days of the original newsletter. The main difference is that the AMSAT-VK group now offers its members a range of shared resources. Instead of being a one way mail out, the group is set up as an internet based forum/discussion group. The group also includes a photo library, a shared file area, a group calendar, a couple of databases and a polling facility. The members of AMSAT-VK also participate in two monthly nets.

When the AMSAT Coordinator needs input from the group or the members of the group wish to make any changes, messages are posted to the message board, and sent out to people via their email. In some cases, we utilise the polling facility and put questions to the vote.

The group does not have a committee and is managed entirely under the Yahoo group model and terms of service. In AMSAT-VK all members are equal. With a few necessary exceptions, every member has the ability to create and edit the content of the site. For example, if a member wishes to create a photo album relating to a particular interest or activity, the member can just go ahead and create it. Obviously, the content must be relevant to the group's focus and must not include offensive or copyrighted materials.

Another example would be in the use of the shared calendar. Members are encouraged to use the calendar to setup skeds and to let people know about events, such as planned DXpeditions!

Simply put: "Our aim is to keep AMSAT-VK open to all, to be inclusive, to be friendly, helpful and to be an enjoyable experience for all our members". We have five basic group rules, which really only summarise and simplify the Yahoo terms of service.

All messages posted to the message board or directly to other members must comply with the Yahoo terms of service.

- No SPAM of any kind is permitted. This includes repeatedly promoting any website, including those URLs which some people append to their "email signatures", with the exception of the URLs of AMSAT-VK, other AMSAT organisations and the Wireless Institute of Australia.
- No commercial advertising or promotions are permitted. However, members are free to recommend products and services, when answering the questions of others.
- Messages should always be courteous, and you should reframe from 'flaming' others. Any form of harassment, discrimination or general nastiness will not be tolerated.
- Messages should relate to our shared interests in amateur radio, space communications and related fields.

We are a friendly bunch of people who enjoy sharing and promoting our hobby and the group is run in an informal, politics-free manner.

As AMSAT-Australia is completely run via the AMSAT-VK group; there are no fees and once you have joined you can remain a member of the group as long as you like. AMSAT-VK is funded by displaying advertising on our website and by the occasional kind donations of our core members.

From now on, in order to avoid further confusion, we shall refer to both AMSAT-Australia and the AMSAT-VK Yahoo group as AMSAT-VK, bringing us in line with most other AMSAT organisations around the world.

Six-monthly review operational AMSATs.

AO-7 AMSAT OSCAR 7

Launch Date: November 15, 1974. This is not a typo, say again, 1974. That is 34 years and still counting!

Status: Operational depending on the amount of sunlight

Current Mode: Listen before transmitting

Uplink: 145.850 to 145.950 MHz CW/USB Mode A

432.125 to 432.175 MHz CW/LSB Mode B

Downlink: 29.400 to 29.500 MHz CW/USB Mode A (1 W PEP)

145.975 to 145.925 MHz CW/USB Mode B (8 W PEP)

145.975 to 145.925 MHz CW/USB Mode C (2 W PEP)

Beacon: 29.502 MHz CW

http://www.amsat.org/amsat-new/satellites/sat_summary/ao7.php

AO-16 PACSAT

Status: Semi-operational

Current Mode: V/U

Uplink: 145.900 MHz FM Voice

Downlink: 437.026 MHz SSB Voice

Broadcast Callsign: PACSAT-11

http://www.amsat.org/amsat/sats/n7hpr/ao16.html

Note: This bird is in its last months of operation before it is expected to shutdown. Operators are encouraged to continue to listen out for AO-16 and to report any activity. More info in six months!

GO-32 Gurwin TechSat-1B

Status: Operational but difficulties are reported occasionally.

Current Mode: V/U

Downlink: 435.225 MHz FM (9600-baud FSK)

Uplinks: 145.850 FM, 145.890 FM, 145.930 FM, 1269.700 FM, 1269.800 FM, 1269.900 FM

Broadcast Callsign: 4XTECH-11

BBS Callsign: 4XTECH-12

http://www.iarc.org/techsat/techsat.html

NO-44 PCSAT

Status: Operational only in full sunlight

Current Mode: V

General Usage Uplink/Downlink: 145.827 MHz 1200 Baud

Special Usage Downlink: 144.390 MHz 1200 Baud

http://pcsat.aprs.org/

SO-50 SAUDISAT-1C

Status: Operational.

Current Mode: V/U

Uplink: 145.850 MHz FM - 67.0 Hz PL tone

Downlink: 436.795 MHz

Mode and Antenna Polarization:

V: Linear

U: Linear

To switch the transmitter on, you need to send a CTCSS tone of 74.4 Hz.

The order of operation is thus: (allow for Doppler as necessary):

1) Transmit on 145.850 MHz with a tone of 74.4 Hz to arm the 10 minute timer on board the spacecraft.
2) Now transmit on 145.850 MHz (FM Voice) using 67.0 Hz to PT the repeater on and off within the 10 minute window.
3) Sending the 74.4 Hz tone again within the 10 minute window will reset the 10 minute timer. Users have reported difficulties recently.

AO-51 ECHO

Status: Voice Repeater

Current Mode(s): FM Repeater - V/U

Analog voice downlink: 435.300 MHz FM, 435.150 MHz FM, 2401.200 MHz FM

Analog voice uplink: 145.880 MHz FM, 145.880 MHz USB, 145.920 MHz FM,

AMSAT-Australia

AMSAT Co-ordinator: Paul Paradigm VK2TXT, email coordinator@amsat-vk.org
Group Moderator: Judy Williams VK2TJU, email secretary@amsat-vk.org
Website: www.amsat-vk.org Group site: group.amsat-vk.org

About AMSAT-Australia

AMSAT-Australia is a group of Australian amateur radio operators who share a common interest in building, launching and communicating with each other through non-commercial Amateur Radio satellites. Many of our members also have an interest in other space based communications, including listening to and communicating with the International Space Station, Earth-Moon-Earth (EME), monitoring weather (WX) satellites and other spacecraft.

AMSAT-Australia uses the Yahoo group AMSAT-VK as the primary point of contact for those interested in becoming involved in amateur radio satellite operations.

If you are interested in learning more about satellite operations or just wish to become a member of AMSAT-Australia, please see our website.

AMSAT-Australia monthly nets

Australian National Satellite net

The net takes place on the 2nd Tuesday of each month at 8.30 pm eastern time, that is 9.30 Z or 10.30 Z depending on daylight saving. The AMSAT-VK net has been running for many years with the aim of allowing amateur radio operators who are operating or have an interest in working in the satellite mode, to make contact with others in order to share their experiences and to catch up on pertinent news. The format also facilitates other aspects like making 'skeds' and for a general 'off-bird' chat. In addition to the EchoLink conference, the net will also be available via RF on the following repeaters and links.

In New South Wales

VK2RMP Maddens Plains repeater on 146.850 MHz

VK2RIS Saddleback repeater on 146.975 MHz

VK2RBT Mt Boyne Repeater on 146.675 MHz

In Victoria

VK3RTL Laverton, Melbourne, 438.600 MHz FM, - 5 MHz offset

In the Northern Territory

VK8MA Katherine 146.700 MHz FM

Operators may join the net via the above repeaters or by connecting to EchoLink on either the AMSAT-NA or VK3JED conferences. The net is also available via IRLP reflector number 9509. We are keen to have the net carried by other EchoLink or IRLP enabled repeaters and links in order to improve coverage. If you are interested in carrying our net on your system, please contact Paul via email.

AMSAT-Australia HF net

Members and interested parties are also reminded of our HF net which is held on the 2nd Sunday of each month. See www.amsat-vk.org for details.

Become involved

Amateur satellite operating is one of the most interesting and rewarding modes in our hobby. The birds are relatively easy to access and require very little hardware investment to get started. You can gain access to the FM 'repeaters in the sky' with just a dual band handheld operating on 2 m and 70 cm. These easy-to-use and popular FM satellites will give hams national communications and handheld access into New Zealand at various times through the day and night.

Should you wish to join AMSAT-VK, details are available on the web site or sign-up at our group site as above. Membership is free and you will be made very welcome.

1268.700 MHz FM - 67Hz PL tone
Digital Downlinks: 435.150 MHz FM 38k4 Digital, PBP, 435.150 MHz FM 9k6 Digital, Pacsat Broadcast Protocol
2401.200 MHz FM 38k4 bps, AX.25
Digital Uplink: 145.860 MHz FM 9k6 Digital, Pacsat Broadcast Protocol
1268.700 MHz FM 9k6 PBP Digital
Beacon: 435.150 MHz
Mode and Antenna Polarization:
T: Linear
V: Linear
U: TX A (usually digital)LHCP
TX B (usually analog) RHCP
L: Linear
S: Linear
Broadcast: PECHO-11
BBS: PECHO-12
http://www.amsat.org/amsat-new/echo/

VO-52 HAMSAT

Status: Operational
Current Mode: U/V - Indian Transponder
Indian Transponder:
Uplink: 435.220 to 435.280 MHz LSB/CW
Downlink: 145.870 to 145.930 MHz USB/CW
Dutch Transponder:
Uplink: 435.225 to 435.275 MHz LSB/CW
Downlink: 145.875 to 145.925 MHz USB/CW
Indian Beacon: 145.859330 MHz CW
Dutch Beacon: 145.860 MHz 12 wpm with CW message
Mode and Antenna Polarization:
V: LHCP
U: RHCP
http://www.amsat.in/hamsat.htm

Note: FM operations on VO-52 are permitted for QRP / hand held. In India, SSB gear is not very common and the operations team have suggested that FM operators can use this bird. If you are planning to work FM, please make way for SSB stations. It would be best to arrange a sked in advance, as VO-52 is rarely used in FM mode over VK and ZL.

CUBESATS

Like the mail, the Cubesat projects just keep coming. They come and go so fast that you need to be in constant touch with a reliable internet source to keep up. They are usually launched in batches of a half-dozen or so from a single launch. Because of this it is always a few weeks before they separate sufficiently and accurate tracking data is available. The monitoring of the telemetry from the Cubesats is becoming a specialised operation requiring close attention to the most reliable and immediate sources. The following information has been gleaned from the AMSAT-NA bulletin board and various other AMSAT sources. Check the very latest information regarding the Cubesats before planning your monitoring sessions.

CO-66 Seeds II

Status: Operational
Beacons 437.4850 MHz CW, 437.4850 MHz AX.25
Mode U Digitalker: 437.4850 MHz FM
Mode U SSTV: 437.4850 MHz

CO-57 CubeSat

Status: Operational
Beacon: 436.8475 MHz CW
Telemetry: 437.4900 MHz AFSK 1200 bps
Callsign: JQ1YGW
http://www.space.t.u-tokyo.ac.jp/cubesat/mission/V/

CO-58 CubeSat

Status: Operational - CW Beacon only 437.4250 MHz AFSK 1200 bps
Callsign: JQ1YGW
http://www.space.t.u-tokyo.ac.jp/cubesat/mission/V/

DO-64, Delfi-C3 (classified as a nano-satellite)

Status: Semi-Operational
TLM beacon 145.870 MHz
Transponder 435.53 – 435.57 MHz up. 145.88 – 145.93 MHz down.
This bird is now operational in SSB Voice.

CUTE1.7+APDII CubeSat

Status: IN ORBIT
Downlink: 437.475 MHz 9k6 Packet
Telemetry heard in VK

COMPASS-1 CubeSat

Status: IN ORBIT
Downlink: 437.275 MHz CW 437.405 MHz Packet
Telemetry heard in VK

SEEDS CubeSat

Status: IN ORBIT
Downlink: 437.485 MHz
Telemetry has been heard in VK

INTERNATIONAL SPACE STATION – the ARISS project

Catalog number: 25544
Launch date: November 20, 1998
Status: Operational
Current Mode: Occasional Voice/packet Digipeater
Expedition 15 crew:
Commander: Fyodor Yurchikhin RN3FI
Flight Engineer: Sunita Williams KD5PLB
Flight Engineer: Oleg Kotov

Digital/APRS:
Worldwide packet uplink: 145.990 MHz FM
Worldwide packet downlink: 145.800 MHz FM

Voice:
Region 1 voice uplink: 145.200 MHz FM
Region 2/3 voice uplink: 144.490 MHz FM
Worldwide downlink: 145.800 MHz FM
SSTV TESTING: watch for updates on the BB.
Worldwide Reported Downlink: 145.800 MHz FM

Crossband Repeater:
Repeater Uplink: 437.800 MHz FM
Repeater Downlink: 145.800 MHz FM

Mode and Antenna Polarization:
V: Linear
U: Linear
Callsigns:
German: DP0ISS
Russian: RS0ISS, RZ3DZR
USA: NA1SS
Packet Mailbox: RS0ISS-11
Packet Keyboard: RS0ISS-3
Digipeater callsign: ARISS

Official ARISS Webpage:
http://www.rac.ca/ariss
ISS Daily Crew Schedule:
http://spaceflight.nasa.gov/station/timelines/

Future goodies

Phase 5a - Marburg University's Mars Mission

This is not an amateur radio satellite in the same sense as any so far. First mooted in 1996, it will be the culmination of over a decade of activity at Marburg University. With the close involvement of AMSAT-DL, it will probably contain an amateur radio beacon designed to test the resolve of even the most advanced amateur station operators. A precedent was set in early December 1996 when a 70 cm beacon on board the Mars Global Surveyor was detected by amateurs when the spacecraft was three weeks into its trip to Mars and five million kilometres from Earth. Technology used by radio amateurs has improved since then but P5a will still be a mighty test for any amateur station. No launch date is available, see P3e.

Status: Design Phase
http://ticket-to-mars.org

Phase 3e - advanced High Orbiter

Proposed Launch Date: Was originally listed as late 2007, which is obviously a bit ambitious. This project will go ahead, if a little late, as it is in a way a test platform for some systems to be flown on P5a. P3e launch is on indefinite hold due to the lack of funds. Estimated cost to launch is $US20 million!

Status: Under Construction
http://www.amsat-dl.org/p3e/

AMSAT-Eagle - advanced High orbiter

Proposed Launch Date: Early/Mid 2009, which is probably rather optimistic.

Status: Although the proposed launch date is listed as 2009, Eagle is still very much in the design stage. No launch has been negotiated at present. Funding is also behind schedule.

http://www.amsat.org

AMSAT-VK members at Wyong 2008. Back: Geoff VK2ZAZ, Paul VK2TXT, XYL (Lisa) and Peter VK2CPH. Front Judy VK2TJU, Adam VK2YK, Mark VK2FBAI, and Mal VK2MAL

Central Coast Field Day 2009

Just a quick reminder that AMSAT-Australia will be at this year's Wyong field day. Pop in and say hi, and put faces to the voices you hear on the birds. Hopefully we will be conducting a satellite demonstration, assuming there is a suitable pass through the day.

Also, we shall arrange a time when the members of AMSAT-Australia can meet as a group. See the group site for details – "group.amsat-vk.org".

Over to you

How to report Pirates to ACMA

The Australian Communications and Media Authority is responsible for investigating complaints about radiocommunications interference.

An article in the December edition of your publication, 'Pirates on the two metre band' outlined a recent investigation carried out by ACMA, resulting in the location of a device causing interference and subsequent action to have the device switched off.

While ACMA is pleased to receive the positive feedback from the author of the article, I would like to clarify one aspect of the article to ensure that your readers can effectively communicate interference matters to ACMA.

Rather than contacting an individual officer, the best way to contact ACMA to report interference issues is by:

Calling 1300 850 115;

Sending an email to interference@acma.gov.au; or

Lodging an interference form on ACMA's website: http://www.acma.gov.au/WEB/STANDARD/pc=ACMA_FORMS_SPECTRUM#Interference

I would appreciate it if you could bring this information to the attention of your readers.

Allan Major
Executive Manager
Regulation and Compliance Branch
Australian Communications and Media Authority

Phil Smeaton VK4BAA

Contest Calendar for February to April 2009

Feb	7/8	Mexico International RTTY Contest	RTTY
	7/8	RSGB 160 Metres Contest	CW
	7/8	WW Peace Messenger Cities Contest	CW & SSB
	14	Asia-Pacific Sprint	CW
	14/15	CQWW RTTY WPX Contest	RTTY
	21/22	ARRL International DX Contest	CW
	20/21	Russian PSK WW Contest	PSK31
	27	CQWW 160 Metres Contest	CW
Mar	7/8	ARRL International DX Contest	SSB
	14/15	RSGB Commonwealth Contest	CW
	14/15	**John Moyle Field Day**	**CW/SSB/FM**
	21/23	BARTG RTTY Contest	RTTY
	28/29	CQWW WPX Contest	SSB
April	4/5	SP DX Contest	CW/SSB
	4/5	EA WW RTTY Contest	RTTY
	11/12	Japan International DX Contest	CW
	11/12	Yuri Gagarin Intl. Contest	CW
	18	Holy Land DX Contest	CW/SSB
	18	TARA Skirmish Digital Prefix Contest	PSK
	18/19	YU DX Contest	CW/SSB
	25	**Harry Angel Sprint**	**CW/SSB**
	25/26	Helvetia Contest	CW/SSB
	25/26	SP DX RTTY Contest	RTTY

A belated Happy New Year to all for 2009. I hope you had a very merry Christmas and that Santa brought you everything that you wanted.

A new year and possibly a new sun spot cycle for us to play with? We will see. The jury is still out on whether the cycle has started, with a few reports of spots often appearing on the Net, only to be followed with a downbeat reaction.

ARRL 10 m contest

Activity in this part of the world was somewhat low for this one - not too surprisingly I suppose. David Burger VK2CZ was again at the controls of VK8AA and managed a creditable 348 QSOs claimed for 11,800 points in the Single Operator High Power SSB section. This is an increase in claimed QSOs from 2007 for David, up from 259. The heady days of 2001 must still be echoing in David's mind however, as the QSO tally for that year was more than 1300. A few hearty souls reported spasmodic activity with VK, JA and ZL during the contest, but nothing too hectic to raise the pulse rate it would seem. It is a hard time for 28 MHz as the days of working the world on a bit of damp noodle are still quite some time ahead of us.

Russian DX Contest 2008 Results

Congratulations to the following stations for entering the contest and gaining creditable positions overall.

Callsign	Section	QSOs	Total
VK7GN	SOAB-CW	721	1242984
VK8AV	SOAB-CW-LP	84	22034
VK4TT	SOAB-CW-LP	40	8910

VK2 VKCC Meeting

A great night was had by all at the Blue Gum Restaurant in Hornsby, North Sydney. The recent CQWW CW Contest topped the discussion agenda and contemplation of possible DXpeditions by a few of the members. Tomas presented a slideshow of some of his adventures on Norfolk Is (VK9N), Macau (XX) and a mysterious location south of Sydney from which he had to abandon an operation due to forces unknown. It was probably a visit from the Bundy Bear.

VK6 VKCC Meeting

The chaps in Perth also tore themselves away from the radio to meet and discuss contesting over a meal and a small libation. With the local NCRG station coming nicely to fruition as regards an impressive antenna system now coming on-line, I suspect that the meeting was arranged by those VKCCers that did not actually attend the meeting but used the station for themselves once the others had been lured away by the promise of pies and beer. Sneaky, but effective!

CQWW CW 2008 Contest

The following VKCC teams participated in CQWW CW 2008 – a record this year with 3 teams!

VKCC Bushrangers	VKCC Blue Tongues	VKCC Devils
VK2BJ	PA0MIR	9M2CNC
VK2BPL	VK4TI	VK2IA
VK2GR	VK6LW	VK4EMM
VK2IM	VK7GN	VK6DXI
VK2NU	VK8AV	

Reports from around VK suggest that 40 m was in reasonable shape for the contest, with 10 m, 15 m and 20 m being a little bit quiet at times – especially 10 m of course! Short Path openings to the US were evident but seemingly localised as some VKs could hear others happily working the US but the US stations themselves being inaudible. Conditions were reported as generally awful from VK2, with 20 m being cited as the worst offender with no LP EU in the afternoon, no LP US in the morning, no short path EU in the late evening, no AF and very little SA. One could be forgiven for wondering if the coax was connected! 15 m was alive for those with a sizeable beam and full legal power output, but for those with 100 watts and a dipole, the band was a bit less forgiving. Another station in VK2 had a ball and worked the bands up to over 2600 QSOs, so a polarised propagation pattern in VK2 this year. Some nasty electrical storms around Sydney might not have helped of course.

VK4 seemed to do a bit better, in that most traffic appeared focussed on the 15 m, 20 m and 40 m bands. This was a similar picture to VK6, with QSOs also featuring mainly on these three bands.

Alek VK6APK entered the contest for his first time in a CW contest. Talk about a baptism of fire – and sitting in Zone 29 too! The LF bands worked well from VK6, allowing Alek to pump-up his DXCC credits a bit more.

Being 'spotted' on the packet network used to be the source of a good run of QSOs with stations vying for your attention. This is not always the case nowadays, with nobody listening for the control station and just calling and calling regardless. It is often quicker to S&P than wrestle with the pile. I have done this previously, with many stations calling with no etiquette at all and ruining the fun for everyone. A good pile will keep operators interested but just tuning around may make the operator nod off! Some nice signals reported on 160 during the contest but it takes time to work them so a well judged QSY to top band is often required in order to maximise the payback for changing bands and dropping the QSO rate in order to grab some wanted multipliers.

A few VK stations have reported being called at a speed far above their CQing speed. The majority were from EU and experienced callsigns. They got little response from the VK station concerned and had to QSY to find the zone multiplier from elsewhere. Maybe, they will learn their lesson for next year!

VK2 VKCC Christmas Meeting. Photo by Tomas VK2CCC.
From Left to Right they are: Vlad VK2IM (AEA) Dave VK2NU, Paul VK2BPL, Tomas VK2CCC and Berndt VK2IA.

VK6 VKCC Christmas Meeting. Photo by John VK6NU.

WPX Rule changes for 2009

Many of the changes are minor and are intended to modernise the rules, make things simpler, or to be more in alignment with other CQ contests. I have taken a sample of some of the rule changes but as regards the use of Skimmer, the WPX Contest will follow the lead of the CQWW Contest when used by single operators. The rule will be identical to the CQWW Contest, in that: "QSO alerting assistance of any kind (this includes but is not limited to: packet; local or remote Skimmer and/or Skimmer-like technology, and the Internet) places the entrant in the Single Operator Assisted category."

Additional clarity has been provided on exactly how the band changes are counted for MS operations, in that "Only one transmitter and one band permitted during any 10-minute period. Exception: One - and only one - other band may be used during any 10-minute period if - and only if - the station worked is a new multiplier. Ten-minute periods are defined as starting with the first

logged QSO on a band. Logs with excessive violations of the 10-minute rule will automatically be reclassified as multi-multi. The log must indicate which transmitter (run or multiplier) made each QSO. Use a separate serial number sequence for each band." The ruling does not elaborate as to what the interpretation of the term "excessive violations" actually is – but maybe there is more on the WPX website.

The club competition rules are now identical to the CQ WW Contest except that a secretary letter listing all eligible club members is not required. Single-band entries must submit all QSOs made, so that QSOs made on other bands during the contest but not submitted in the log entry does not penalise the other entrants for 'Not In Log' QSOs that result from the missing log entries.

If you have any contest related material for inclusion within the column, topics that you would like covered or even some experiences and pictures you would like to share, then please feel free to get in touch via vk4baa@wia.org.au. See you on the bands.

John Moyle Field Day Contest 2009

Presented by Denis Johnstone VK4AE/VK3ZUX

14 - 15 March, 2009

0100 UTC Sat - 0059 Sun

I wish all entrants good luck, and look forward to hearing you on air during the contest!

N.B. new email address: jmfd2009@wia.org.au and you can check out latest information at http://www.wia.org.au/contests/

Overview

1. The aim is to encourage and provide familiarisation with portable operation, and provide training for emergency situations. The rules are therefore designed to encourage field operation.
2. The contest takes place on the third full weekend in March each year, and runs from 0100 UTC Saturday to 0059 UTC Sunday, 14-15 March 2009.
3. The contest is open to all VK, ZL and P2 stations. Other stations are welcome to participate, but can only claim points for contacts with VK, ZL and P2 stations.
4. Single operator portable entries shall consist of ONE choice from each of the following (e.g. 6 hour, portable, phone, VHF/UHF):
   a. 24 or 6 hour;
   b. Phone, CW, Digital, or All modes;
   c. HF, VHF/UHF or All Bands.
5. Multi-operator portable entries shall consist of ONE choice from each of the following (e.g. 24 hour, portable, phone, VHF/UHF):
   a. 24 or 6 hour;
   b. Phone, CW, Digital, or All modes;
   c. HF, VHF/UHF or All Bands.
6. Home and SWL operator entries may only be either 24-hour or 6-hour, all modes, all bands.

Scoring

7. Portable HF stations shall score 2 points per QSO. CW only contacts to score 4 points per QSO for contacts with either home or portable stations. Digital modes score 2 points per contact.
8. Portable stations shall score the following on 6 m:
   a. 0-49 km, 2 points per QSO;
   b. 50-99 km, 5 points per QSO;
   c. 100-149 km 10 points per QSO;
   d. 150-299 km 20 points per QSO;
   e. 300-499 km 30 points per QSO;
   f. 500 km and greater, 2 points per QSO.
9. Portable stations shall score the following on 144 MHz and higher:
   a. 0 to 49 km, 2 points per QSO;
   b. 50 to 99 km, 5 points per QSO;
   c. 100 to 149 km, 10 points per QSO;
   d. 150 to 300 km, 20 points per QSO.
   e. 300 km and greater, 30 points per QSO.
10. For each VHF/UHF QSO where more than 2 points is claimed, either the latitude and longitude of the station contacted or other satisfactory proof of distance such as the 6-figure Maidenhead Locator must be supplied.
11. Home stations shall score:
    a. Two points per QSO with each portable station.
    b. One point per QSO with other home stations.

Log Submission

12. For each contact: UTC time, frequency, station worked, RST/serial numbers sent/received and claimed score. (VHF and above location of other station and distance showing the Lat/Long or Maidenhead Locator to 6 figures for the station worked.)
13. Logs must be accompanied by a summary sheet showing: call sign, name, mailing address, section entered, number of contacts, claimed score, location of the station during the contest, and equipment used, and a signed declaration stating "I hereby declare that this station was operated in accordance with the rules and spirit of the contest and that the contest manager's decision will be accepted as final". For multi-operator stations, the names and call signs (legible) of all operators must be listed.
14. Paper logs may be posted to "John Moyle Contest Manager, 27 Laguna Ave, Kirwan 4817 QLD". Alternatively, logs may be e-mailed jmfd2009@wia.org.au, vk4ae@wia.org.au or to vk4ae@hotmail.com, or snail mailed via the WIA Contest Manager JMMFD, P.O. Box 2042 Bayswater, VIC 3153. The following formats are acceptable: Microsoft Excel or Word, ASCII text or electronic log programs such as VK Contest Log (VKCL). Logs sent by disc or e-mail must include a summary sheet and declaration, but the operator's name (legible) is acceptable in lieu of a signature. Logs must be postmarked no later than 17 April 2009.

Certificates and Trophy

15. At the discretion of the Contest Manager, certificates will be awarded to the winners of each portable section. Additional certificates may be awarded where operation merits it. Note that entrants in a 24 hour section are ineligible for awards in a 6 hour section.
16. The President's Cup, a perpetual trophy held at the National Office, will be awarded to the Australian portable Club station with the highest score entered in the 24-hour, All modes, All bands section. "Club station" for this contest means a club affiliated with the WIA. The winning Club will receive an individually inscribed wall plaque as permanent recognition.

Disqualification

17. General WIA contest disqualification criteria, as published in Amateur Radio from time to time, applies to entries in this contest. Logs which are illegible or excessively untidy are also liable to be disqualified.

Definitions

18. A portable station comprises field equipment operating from a power source, e.g. batteries, portable generator, solar power, wind power, independent of any permanent facilities, which is not the normal location of any amateur station.
19. All equipment comprising the portable station must be located within an 800 m diameter circle.
20. A single operator station is where one person performs all operating, logging, and spotting functions.
21. A single operator may only use a callsign of which he/she is the official holder. A single operator may not use a callsign belonging to any group, club or organisation for which he/she is a sponsor except as part of a multi-operator entry.
22. A multi-operator station is where more than one person operates, checks for duplicates, keeps the log, performs spotting, etc.
23. A multi-operator station may use only one call sign during the contest.
24. Multi-operator stations may only use one transmitter on each band at any one time, regardless of the mode in use.
25. Multi-operator stations must use a separate log for each band.
26. Logs submitted electronically can use a separate Excel worksheet for each band linked to a summary sheet. A typical example is shown at http://www.wia.org.au/contests which can be copied and adapted for the individual use of either a single or multi operator station.
27. A station operated by a club, group, or organisation will be considered to be multi-operator by default.
28. None of the portable field equipment may be erected on the site earlier than 28 hours before the beginning of the contest.
29. Single operator stations may receive moderate assistance prior to and during the contest, except for operating, logging and spotting. The practice of clubs or groups providing massive logistic support to a single operator is, however, totally against the spirit of the contest. Offenders will be disqualified, and at the discretion of the manager, may be banned from further participation in the contest for a period of up to three years.
30. Phone includes SSB, AM and FM.
31. CW means Morse code.
32. Digital modes include any other mode other than the above (Rules 30 and 31), such as RTTY, Packet, PSK31, etc. Another station may be worked only once per period on any digital mode: i.e. you cannot work them on RTTY, then PSK31, then packet - only one digital contact allowed, regardless of mode, per period (see rule 35).
33. All amateur bands may be used except 10, 18 and 24 MHz. VHF/UHF means all amateur bands above 30 MHz. Note: On 50 MHz, the region below 50.150 has been declared a contest free zone, and contest CQs and exchanges may only take place above this frequency. Stations violating this rule will be disqualified.
34. Cross-band, cross-mode and contacts made via repeaters or satellites are not permitted for contest credit. However, repeaters may be used to arrange a contact on another frequency where a repeater is not used for the contact.
35. Stations may make repeat contacts and claim full points for each one. For this purpose, the contest is divided into eight consecutive three-hour blocks: 0100-0359, 0400-0659, 0700-0959, 1000-1259, 1300-1559, 1600-1859, 1900-2159, 2200-0059 UTC. If you work a station at 0359 UTC a repeat contact may be made after the start of a new block providing they are not consecutive, or are separated by at least five minutes, since the previous valid contact with that station on the same band and mode.
36. Stations must exchange ciphers comprising RS(T) plus a 3 digit number commencing at 001 and incrementing by one for each contact.
37. Portable stations shall add the letter "P" to their own cipher, e.g. 59001P.
38. Multi-operator stations are to commence numbering on each band with 001.
39. Receiving stations must record the ciphers sent by both stations being logged. QSO points will be on the same basis as for Home Stations, unless the receiving station is portable.
40. The practice of commencing operation and later selecting the most profitable operational period within the allocated contest times is not in the spirit of the contest, and shall result in disqualification. The period of operation commences with the first contact on any band or mode, and finishes either 6 or 24 hours later.

If anyone wishes to contact me privately to discuss rules etc, my home phone number is (07) 4723 4229, and my snail mail and e-mail address is as shown in the Log Submission section above.

Denis Johnstone (VK4AE/VK3ZUX)

Spring VHF-UHF Field Day 2008: Results

Contest manager: John Martin VK3KM

The number of logs received for the Spring Field Day has increased each year for the last four years, and this year's event set another new record with a 60 per cent increase in logs compared with this time last year. The Summer Field Day has traditionally seen more activity than the Spring event, but this year's activity also breaks the previous Summer Field Day record.

According to the rules, if the winner of Section A also enters section B, his log is excluded from Section B. That was the case this year, so the total becomes 71 logs from 67 different entrants.

It is good to see a notable increase in the numbers of both portable and home stations, with a number of callsigns appearing in the list for the first time. The geographic spread of stations is also increasing, although there are still gaps in VK6 and VK7.

Microwave activity was static, or a little lower than usual in some areas. But it is noteworthy that this year's event saw the first Field Day contact on the 47 GHz band. At the other end of the spectrum, some of the 6 metre scores were much higher than usual, and this suggests that we will see greater use of this band in future events.

Now on to the results. Congratulations to Tim Dixon VK5ZT for winning Section A with a marathon roving effort. For Section B, the prize goes to Gavin Brain VK3HY. In the multi-operator sections, the 24 hour winners were VK3UHF (operated by Chas VK3PY and David VK3QM), and the 8 hour winner was VK3XPD, operated by Alan VK3XPD and Michael VK3KH. The top home station was Matt Hetherington VK2DAG.

The next Field Day will be the summer event, to be held over the weekend of January 17 and 18. Will it set another new record?

Call	Name	Location	50 MHz	144 MHz	432 MHz	1296 MHz	2.4 GHz	3.4 GHz	5.7 GHz	10 GHz	47 GHz	TOTAL
Section A: Single Operator, 24 Hours												
VK5ZT	Tim Dixon	PF85,86,87,94,95,96,97	130	555	900	912	-	-	-	1160	-	3657
VK4OE	Doug Friend	QG62, QG63	57	450	645	576	460	-	-	550	210	2948
VK5ADE	Stuart Cameron	PF85, 86, 95, 96	104	390	660	808	-	-	-	890	-	2852
VK1DA	Andrew Davis	QF44	51	747	655	464	290	-	-	240	-	2447
VK3ECH	Rob George	QF24	95	516	625	640	-	-	-	-	-	1876
VK5AKH	Andrew Hall	PF94, PF95, PF96	88	369	560	280	-	-	-	570	-	1867
VK5OQ	Keith Gooley	PF85, 86, 95, 96	76	300	425	560	-	-	-	210	-	1571
VK5AR	Alan Raftery	PF94	32	537	505	208	-	-	-	-	-	1282
VK2VRS	Russell Simon	QF68	-	273	505	496	-	-	-	-	-	1274
VK5LA	Andrew Williss	PF84, PF85	58	426	530	-	-	-	-	-	-	1014
VK4HEC	Ewen Cameron	QG52	24	441	250	-	-	-	-	-	-	715
VK2AMS	Mark Swannack	QF68	31	279	290	-	-	-	-	-	-	600
VK1XYZ	Michael Wagner	QF44	25	264	155	-	-	-	-	-	-	444
VK3HV	George Francis	QF31	-	108	125	168	-	-	-	-	-	401
VK5FAAF	Robert Allen	PF96	-	248	124	-	-	-	-	-	-	372
VK2ZSZ	Steve Zoneff	QF44	21	162	-	-	-	-	-	-	-	183
Section B: Single Operator, 8 Hours												
VK3HY	Gavin Brain	QF32	124	471	725	800	-	-	-	-	-	2120
VK3BG	Ed Roache	QF24	70	372	515	712	-	-	-	-	-	1669
VK5AKH	Andrew Hall	PF94, PF95, PF96	74	276	465	280	-	-	-	340	-	1435
VK5DK	Colin Hutchesson	QF02	-	267	-	-	320	320	210	210	-	1327
VK3OE	Andrew Martin	QF21,QF22, QF31	96	387	550	256	-	-	-	-	-	1289
VK4UAT	Allan Turner	QG61, QG62	-	63	165	264	330	-	-	330	-	1152
VK3EK	Rob Ashlin	QF42	-	255	400	264	-	-	-	-	-	919
VK5ADE	Stuart Cameron	PF85, 86, 95, 96	98	327	495	776	-	-	-	-	-	890
VK4ALH	Leicester Hibbert	QG63	49	234	315	-	-	-	-	210	-	808
VK3YFL	Bryon Dunkley-Smith	QF22, QF23	70	318	365	-	-	-	-	-	-	753
VK5LA	Andrew Williss	PF84, PF85	43	300	365	-	-	-	-	-	-	708
VK3LOL	Robert Nicoll	QF21	-	165	320	-	-	-	-	-	-	485
VK4EV	Ron Everingham	QG62	36	111	175	-	-	-	-	-	-	322
VK3PRA	Ruben Acevedo	QF21	-	150	-	-	-	-	-	-	-	150

Section C: Multi Operator, 24 Hours

VK3UHF	LUMEG (1)	QF21	121	849	1130	1152	1060	440	560	700	6012
VK3ER	EMDRC (2)	QF22	243	987	1340	1360	-	-	-	-	3930
VK5LZ	Elizabeth ARC (3)	PF85, 86, 95, 96	115	489	785	1016	-	-	-	1000	3405
VK5OM	(4)	QF03	131	696	800	1200	210	-	-	-	3037
VK1BL	(5)	QF44	40	768	605	536	410	-	-	350	2709
VK4WAT	Tableland REC (6)	QH22	220	432	510	496	-	-	-	260	1918
VK3JTM	(7)	QF12	-	432	635	808	-	-	-	-	1875
VK2BTW	Tamworth RC (8)	QF58	58	471	430	224	-	-	-	-	1163
VK2AWX	Hunter RG (9)	QF56	165	588	400	-	-	-	-	-	1153
VK3III	Wimmera ARG (10)	QF13	48	297	435	296	-	-	-	-	1076
VK3LCD	(11)	QF01	-	372	415	-	-	-	-	-	787
VK4WIE	CBRS (12)	QG62	-	417	320	-	-	-	-	-	737

Section D: Multi Operator, 8 Hours

VK3XPD	(13)	QF21, QF22	82	363	410	624	450	440	450	450	3269
VK5LZ	Elizabeth ARC (3)	PF85, 86, 95, 96	104	387	635	912	-	-	-	960	2998
VK3AIG	(14)	QF12	104	348	520	432	370	-	-	-	1774
VK3FRC	FAMPARC (15)	QF21	104	453	365	400	-	-	-	-	1322
VK3APC	MDRC (16)	QF21	79	135	255	304	-	-	-	-	773
VK2MA	HADARC (17)	QF46	38	216	190	256	-	-	-	-	700
VK2EH	CCARC (18)	QF56	-	234	305	-	-	-	-	-	539

Section E: Home Station, 24 Hours

VK2DAG	Matt Hetherington	QF56	86	666	640	688	-	-	-	-	2080
VK4ZDP	David Purkis	QH32	71	294	360	264	-	-	-	-	989
VK3KIS	Andrew Kayton	QF22	48	192	355	320	-	-	-	-	915
VK5LSB	Simon Brandenburg	PF94	72	348	470	-	-	-	-	-	890
VK2EI	Neil Sandford	QF68	37	516	315	-	-	-	-	-	868
VK5FUNE	Darryl Ross	PF95	-	300	425	-	-	-	-	-	725
VK3CT	Damien Wright	QF31	-	372	340	-	-	-	-	-	712
VK3TPR	Peter Roberts	QF22	51	249	350	-	-	-	-	-	650
VK4TJ	John Kirk	QG52	22	186	245	168	-	-	-	-	621
VK1PAR	Alistair Long	QF44	52	312	255	-	-	-	-	-	619
VK3DMW	Ken Brown	QF31	-	246	105	264	-	-	-	-	615
VK2EAH	Andy Hood	QF56	-	360	250	-	-	-	-	-	610
VK4FJON	John Cockinos	QG62	-	261	210	-	-	-	-	-	471
VK3FMCQ	Nick Kraehe	QF31	-	261	165	-	-	-	-	-	426
VK3BLE	Colin Pomroy	QF31	-	174	220	-	-	-	-	-	394
VK3XOR	Craig White	QF22	40	123	205	-	-	-	-	-	368
VK1WJ	Waldis Jirgens	QF44	26	114	140	-	-	-	-	-	280
VK2KTC	Tom Clifford	QF56	38	81	125	-	-	-	-	-	244
VK3DAG	Steven Hamer	QF23	45	69	115	-	-	-	-	-	229
VK4JAZ	Grant McDuling	QG62	35	-	105	-	-	-	-	-	140
VK2ZQX	John Watson	QF58	21	104	-	-	-	-	-	-	125
VK3KST	Tom Steadman	QF31	-	120	-	-	-	-	-	-	120

(1) Lara UHF-Microwave Experimenters Group: Chas Gnaccarini VK3PY, David Learmonth VK3QM

(2) Eastern and Mountain District Radio Club: Mike VK3AVV, Doug VK3FSNO, John VK3PZ, ,Jonas VK3VF, Hannah VK3GNU, Ivy VK3LNX, Peter VK3QI, Max VK3WT, Jack VK3WWW

(3) Elizabeth Amateur Radio Club: Iain Crawford VK5ZDB, John Ross VK5NI, Steve Mahony VK5AIM

(4) Jim Bywaters VK5OM, Bill Day VK3LY, Brian Farmers VK3AQX

(5) Ted Garnett VK1BL, Greg Parkhurst VK1AI, Andy Sayers VK2AES

(6) Tableland Radio & Electronics Club: John Roberts VK4TL, Dale McCarthy VK4DMC, Stuart Dunk VK4SDD, Jeff Cochrane VK4BOF

(7) Tim Morgan VK3JTM, Dylan Cator VK3JWC

(8) Tamworth Radio Club: ,John Hams VK2JH, Cris Perrett VK2FBOZ, ,Robert Duck VK2VRD, ,Alan Alderson VK2HQD, Brenda Taylor

(9) Hunter Radio Group: T. Easlea VK2COE, G. Wrightson VK2SH, G. O'Brien VK2FA, M. Clarke VK2MJC, W. Lawrence VK2FWJL, P. White VK2YPW

(10) Wimmera Amateur Radio Group: David Timms, VK3YLV, Andy Squires VK3AS, Doug Kay VK3KAY, ,Neil O'Shannassy VK3UCO

(11) Gary Smith VK3LCD, Paul Brown VK3HJV

(12) City of Brisbane Radio Society: Miles Colledge VK4FUST, Ross Colledge VK4WRC, John Morris VK4MJF

(13) Alan Devlin VK3XPD, Michael Coleman VK3KH

(14)John Kennedy VK3AIG, Ian Lloyd VK3IDL, Ian McDonald VK3AXH

(15) Frankston and Mornington Peninsula ARC: Ed VK3GD, David VK3EW, Roy VK3GB, Stjepan VK3WF, David VK3LDR

(16) Moorabbin & District Radio Club: Ian Morris VK3IFM, Lee Moyle VK3GK, Gerard Werner VK3GER

(17) Hornsby & Districts Amateur Radio Club: Steve VK2BCD, Rosa VK2ANG, Rod VK2DAY, Dave VK2HSS, Tomas VK2CCC, Mark VK2BMW, Mike VK2FNBA, Peter VK2TTP

(18) Central Coast ARC: Dave Hardy VK2JDH, Col Matten VK2KCM

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David Smith VK3HZ – vk3hz@wia.org.au

Weak Signal

David Smith VK3HZ

Welcome back from the season's festivities. I trust that the New Year's resolutions include improvements to the station, and more time on air to work the DX.

Of course, AR magazine also has a break over Christmas, so this report covers the period from early November to early January – double the normal period over what is often one of the busiest periods of the year. So, forgive me if I have missed some significant contacts.

What a season it has been so far. November was relatively quiet. December started with a burst of Es propagation, and then went quiet before finally delivering a bumper few days of Es for Christmas and the New Year. But, I am getting ahead of myself.

The morning of December 4th saw the first of the 2 m Es contacts. In a short and patchy opening, starting at 2348 Z, Ron VK4DD worked Kevin VK3WN, Geoff VK3CNX, Alan VK3XPD and Andrew VK3OE. Other contacts included VK4KK to VK3OE and VK3WN, and VK4JMC to VK3WN.

On December 6th, several Brisbane stations were working up the coast nearly to Townsville (VK4FNQ) when Trevor VK3VG in central Victoria broke in. Trevor had been working on the computer in the shack and heard VK4BG and VK4DD chatting. The opening was only brief and he only managed to work Ron VK4DD.

December 7th saw two huge Es openings. The first, commencing at about 2230 Z and lasting for 2.5 hours, was from northern VK4 to VK5. Stations involved included VK4FNQ, VK4BKP, VK4BEG, VK4FP, VK5BC/MM, VK5PJ, VK5NY, VK5ACY and VK5ZK. Brian VK5BC was maritime mobile on a houseboat on the Murray north of Murray Bridge and worked John VK4FNQ using a 5/8 whip.

The other opening on December 7th was from VK2 and VK3 to southern ZL. At 0013 Z, Steve VK2ZT worked ZL3OZ. Bob ZL3TY then got into the action. Over the next 2 hours, Bob worked 29 VK stations with the opening working its way south and then west along the coast of Australia. Bob reports that it is the best Es opening he has ever experienced. Stations worked include VK2BHO, VK2BZE, VK2ARA, VK2HN, VK3ZYC, VK3OE, VK3XPD, VK3MIR, VK3ESE, VK3DUT, VK3NX, VK3PY, VK3KAI, VK3WRE, VK3AKK, VK3RU, VK3QM, VK3TPR, VK3AMK, VK3HZ, VK3ZYS, VK3ALZ, VK3AFW, VK3SO, VK3AMZ, VK3BQJ, VK3CAT, VK3CMC and VK3WN. Also in the fray were ZL3JT and ZL3NW on the NZ team, and VK2BHO, VK2AH, VK2BXT, VK2BZE, VK2ZEJ, VK2HN, VK2GKA and VK2APG.

The following day (December 8th) was a lot quieter. At around 0400 Z, Bob ZL3TY reported working VK2GKA and VK2ZT.

Things then quietened down considerably, with not a great deal to report until Christmas Eve. On December 24th, Bob ZL3TY reported working VK2FZ and VK2XTT. He also heard the Cooma beacon on 144.5875 and Ch5A Newcastle. Ron VK4DD reported hearing Joe VK7JG, and working VK3WN and VK5DK.

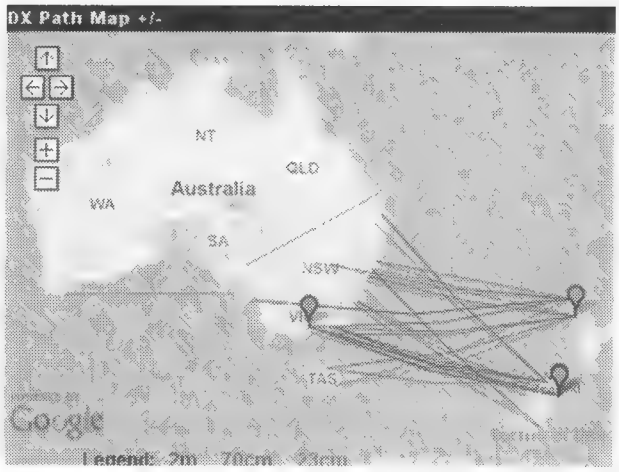
On Boxing Day, a high-pressure cell over Bass Strait produced some good tropo conditions between VK3 and VK7 with Joe VK7JG and Norm VK7AC working many VK3 stations.

On the evening of December 29th, another tropo opening produced some good signals from Adelaide into VK6. At about 0900 Z, Rob VK6JRC worked Phil VK5AKK and Brian VK5BC/P on 2 m. Bill VK5ACY worked Wally VK6WG on 2 m (5x5) and several times on 70 cm peaking to S9. Also working Wally on 70 cm were VK5AKK, VK5ZK and VK5BC/P.

Then on December 30th, the heavens seemed to open – well, almost. A huge Es cloud descended upon east central Australia causing an extended opening lasting 5.5 hours during which several VK records were broken. There was so much activity and so many stations involved that I could not hope to describe it all. Some of the notable contacts, showing the shifting conditions, are listed below.

The first inkling of the big opening was at 2153 Z when Ray VK4BLK in Yepoon worked Rob VK1ZQR in Canberra. Kevin VK4BKP in Mackay then joined in working into VK2 and then VK3. Then Brisbane stations were working into Melbourne. At 2330 Z, Matt VK2DAG worked across to Peter VK5ZPG. Then at 0000 Z, Adam VK4CP worked Jeff VK5GF in Adelaide. At 0030 Z, Norm VK7AC worked Andru VK4KAY in Mackay over a distance of 2254 km. At 0130 Z, Wally VK6WG joined the fun and worked Bill VK5ACY via Es. At 0144 Z, Wally worked Matt VK2DAG for a distance of 3080 km. Three minutes later, he worked Steve VK2ZT to set a new VK2 and VK6 2 m record of 3140 km. At 0154 Z, Bill VK6BE, three km closer than Wally, also worked both Matt and Steve. Bill also worked Col VK2KOL and Karl VK2GKA. After a short lull, at 0230 Z Ian VK1BG worked VK6WG for a new VK1 2 m distance record of 2819 km. At 0245 Z, a short CQ from Brad VK2GWB was answered by Wally VK6WG. Then, nearly an hour later at 0320 Z, Rob VK1ZQR worked VK6YAU (Wally's son running from Wally's QTH) to reset the VK1 record to 2830 km. Finally, at 0330 Z, to round out an incredible day, Andrew VK3OE worked Bill VK6AS in Esperance. Bob VK6BE reported that it was one of the best days he has ever encountered. In the space of one hour, he worked VK2KOL, VK5THA, VK2BXT, VK2BCC, VK2ZT, VK5DJ, VK5BC, VK5KCX, VK5KC, VK2DAG, VK5AIM, VK5GF, VK5NZ, VK5OZ, VK2FZ, VK5ZBK, VK5ACY, VK1ZQR and VK2TP.

The following day – December 31st – saw more Es openings from VK2/4 to northern ZL and across eastern Australia. Again, there were many contacts, so I will only mention a few. At 2300 Z, Ross VK2DVZ worked ZL1SWW followed closely by ZL2TAL and ZL1IU. By 0130 Z, the cloud had moved north, with Adam VK4CP working ZL1TPH. From



The map from the VK Logger showing the Spots gives some idea of what was happening – lines going every which way across the Tasman.

about 0430 Z, northern VK4 stations were working into VK3 and VK5. By about 0600 Z, propagation had gone.

New Years Day brought another incredible Es opening from the east coast across to ZL. Things started at 2345 Z with Ross VK2DVZ working ZL3OZ. Once again, there were too many contacts to mention. Contacts were flying between ZL1, 2, 3 and 4 to VK1, 2, 3, 4, 5 and 7. At 0100 Z, Nick ZL1IU worked across to Jeff VK5GF (3179 km) and Garry VK5ZK, slightly closer. ZL1, 3 and 4 were worked by many stations in Melbourne – for many of the VK3s, this was their first ever ZL on 2 m. To add to the mix, at 0115 Z, Brian VK5BC/P worked Wally VK6WG – possibly via Tropo. At 0146 Z, Peter VK5ZPG worked Glenn VK4BG. Chris VK1DO/P was in the thick of things at his beach house on the southern NSW coast. He worked 15 ZLs easily, and then just for fun, he went mobile down to the shops. On the way, at 0215 Z, he worked Nick ZL1IU setting a new VK 2 m mobile record of 2320 km.

The opening continued for over 4 hours until 0400 Z. The map from the VK Logger showing the Spots gives some idea of what was happening. – lines going every which way across the Tasman.

As an aside, Ron VK3AFW, one of the gentlemen of the air and technical boffin combined, was quite chuffed to have finally worked a ZL on 2 m. He writes:

On the 10th of January I will have been licensed for 48 years. I worked my first ZL on 2 m early in December 2008 just gone. There have been four or five openings since 1990 in which I have heard a ZL and listened while others worked him but I could not make the grade until a couple of weeks ago. I was out or not operational on 2 m for all other openings over the last 48 years.

Yesterday I worked 7 ZLs from the middle of the top part of the North Island to the bottom east coast.

Around the early to mid 1970s, I was engaged in a VK-ZL propagation experiment. Although we had official permission for an elaborate beacon detection and alarm system, we never got the receiver working let alone the rest of the system. Not enough willing workers. As convenor, I have to take the blame for not getting it completed by bullying more people and or doing more myself. A ZL in Christchurch was our contact (Terry Carroll I think) and their beacon was to be monitored. Ken McCracken took over the project but changed it to 6 m.

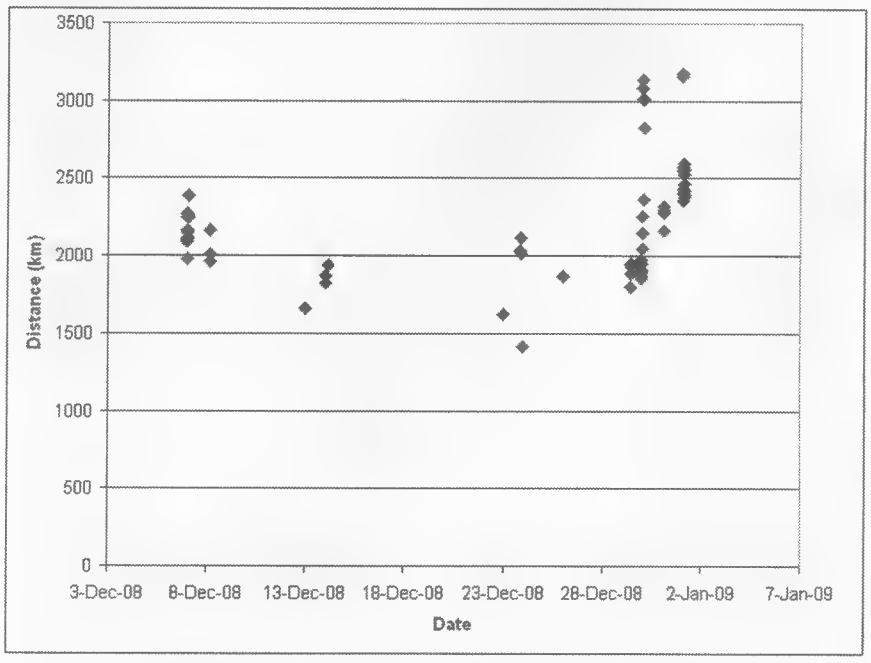
So to work a couple of stations around Christchurch was a bit like closure for me. And to work ZL1, 3 and 4 was worth the wait. This season has produced the best couple of Es openings on 2 m to ZL in 50 years. If the band does not open again until next season, it won't matter for me now.

There was one opening in the 1950s when a ZL was copied in Melbourne, including 5x9 by a mobile. As this was unheard of (all AM then) the group labelled the station a pirate and refused to work him. Of course the truth came out days later. I can only imagine the gnashing of teeth, ripping out of hair, banging of foreheads and general cussing that went on.

Anyway, I digress. On with the propagation reports.

January 3rd and 4th saw some good Tropo conditions across Bass Strait from VK7 to VK3. Norm VK7AC was putting a particularly strong signal across the water. On the 4th, there was an Es opening from VK2 to ZL1. At around 0030 Z, the VK8RAS 2 m beacon was heard by both Peter VK6KXW near Perth, Steve VK2ZT and Col VK2KOL.

On January 6th, some good Tropo conditions occurred from VK2 to ZL. From a portable location at the very northern tip of ZL, Steve ZL1TPH reports working VK2ZT, VK2AMS, VK2KOL, VK2EI, VK2TG, VK2IDM and VK2EY on 2 m and VK2AMS, VK2ZT and VK2DVZ on 23 cm.



Rex VK7MO created this chart from the VK Logger History page. It shows the 20 longest distance QSOs for each day from early December:

Then on the 7th, Steve had moved down the west coast of the North Island and reports working VK2DVZ, VK2AMS, VK2EI, VK2XW, VK2MAX, VK2TG and VK2BHO on 2 m and VK2ZT, VK2AMS and VK2DVZ on 23 cm.

So, all in all, a bumper Es season so far, but the Tropo has not been outstanding. Let's see what the next few months bring.

All not plain sailing

A few stories came out of the happenings over the last two months.

Although the Es seemed to be raining down upon us in Melbourne on New Year's Day, with lots of activity from ZL, not all of the stations in the area were having success. Both Bryon VK3YFL and Doug VK3UM reported spending a fruitless day looking for any ZL contacts, with only a brief burst or two heard. After much checking of station performance, the conclusion that both of them came to was that their takeoff angle in the ZL direction (3 degrees for each) was just too much for them to work into the Es cloud. Perhaps portable/mobile operation is the answer next time.

Bob VK6BE was in the thick of things during the VK2-VK6 opening. While he worked many stations, he was not impressed with the operating technique of one VK2. It seems that the VK2 was frequently calling on 144.1 and announcing he was listening on another frequency. However, he did not appear to be monitoring 144.1 and was calling over the top of whoever was on the frequency at the time. While stations are encouraged to QSY away from 144.1 (witness the dog pile on that frequency in Melbourne when the ZLs were thundering in), the regulations state that you must check that a frequency is clear before calling. A simple "is this frequency in use?" is all that is required.

Ross VK2DVZ almost succeeded in working Bob VK6BE. However, unfortunately the QSO was invalidated by some over-eager assistance from another station. Ross writes:

I missed out on completing a contact with Bob VK6BE during the Es opening that occurred on 30-12-2008 - a contact of about 3221 km that would have been rewarding, could it have been achieved. The potential to set a new VK2/VK6 distance record still goes begging as a result of an unknown well-meaning amateur located in VK5, insisting on relaying the signal report that Bob had given me, which I was unable to copy due to the initial QSB. Each time I asked for a repeat of my report from Bob, the unknown operator who had a stronger signal than Bob's insisted on stating '57', making it virtually impossible for me to read Bob's reply. Several times this happened during the brief window of opportunity, but as a result of the 'interference' the contact was unable to be completed as the QSB finally took out Bob's signal completely.

It is worth repeating that, for a valid QSO, the two stations must exchange callsigns and another piece of unknown information (usually a signal report). This must be done directly on air, without assistance from other operators, loggers, email, telephone etc.

Several operating practices that I observed caused some difficulties for others. Firstly, some operators insist on using non-standard phonetics for their callsign – America instead of Alpha, for example. Unfortunately, when a signal is being chopped up by Sporadic E, it becomes difficult to identify the parts of the phonetics that get through – instead of 26 options that the brain can choose from by filling in the gaps, the problem becomes much larger. I waited for over a minute in a queue to work one ZL while a local repeated his non-standard phonetics over and over without success. When he finally switched to standard phonetics, the callsign went through first time. The other thing worth mentioning is that Sporadic E openings often only last for a very short time. Unfortunately, some operators insist on having long-winded overs giving their life story, weather, etc, while others wait impatiently in the queue. All that is necessary for a contact is to exchange callsigns and signal reports - name and QTH if you must. However, please be brief and allow others to have a go.

Aircraft Enhancement

After many months (years) of trying, Barry VK3BJM in Kyneton has finally managed to work Peter VK5ZPG in Quorn. Barry writes:

Monday morning and I was still in the shack at 2235 Z on 28/12/08. Tropo out to the west was unspectacular. I noticed a QANTAS flight QF575, travelling from Sydney to Perth, at an altitude of 40,000'. It was still in NSW, SW of West Wyalong, and had started tracking toward Berri, SA. Berri is in the mid-way region between Peter VK5ZPG and myself. I posted a note on the Logger at 2241 Z, then gave Peter a call on the phone to make sure he would be listening. At 2248, and with the aircraft still about 6 degrees north of the beam heading (i.e. at 316 degrees True; Peter is at 311 degrees True), I started calling. Just before 2250 Z, Peter appeared, and we exchanged reports; I gave him 41, and he gave me a 42. The opening lasted about a minute in total. The aircraft was just south of Berri at the time. The Logger calculated the distance at 795.5 km.

Interestingly, Michael VK3KH noted having heard quite a bit of Peter's side of the contact, too, which is a good effort. This bodes well for those in Melbourne with lower noise floors.

Please send any Weak Signal reports to David VK3HZ at vk3hz@wia.org.au.

The Magic Band – 6 m DX

Brian Cleland VK5BC

Many good openings in VK occurred during November particularly down the eastern seaboard and VK5. Conditions further improved during December with the first good openings to VK6 from VK5 occurring on the 9th and 10th of Dec. On the 9th, the band was open for most of the morning with many VK6 stations active and both the Perth VK6RPH and Bunbury VK6RBU beacons good strength into VK5. The same again on the 10th, but this time the band also opened to Albany, with Bob VK6BE and Wally VK6WG both working VK5's. It is great to hear these old timers both active and as keen as ever.

At around 0500 UTC on the 14th December after a good day when the band had been open to most areas of VK including VK8 (Alice Springs and Darwin) as well as to Norm P29NB,

Willem DU7/PA0HIP in Lapu-Lapu City, Philippines, was heard calling CQ on CW by Paul VK4MA in Hervey Bay who completed a contact with Willem. CW contacts with Willem were then completed by Russel VK4BEG, Garry VK5ZK, Peter VK5PJ, Steve, VK3OT and Mark VK8MS. Willem was running 100 W from an IC-746 into 2 x 5-el Yagis.

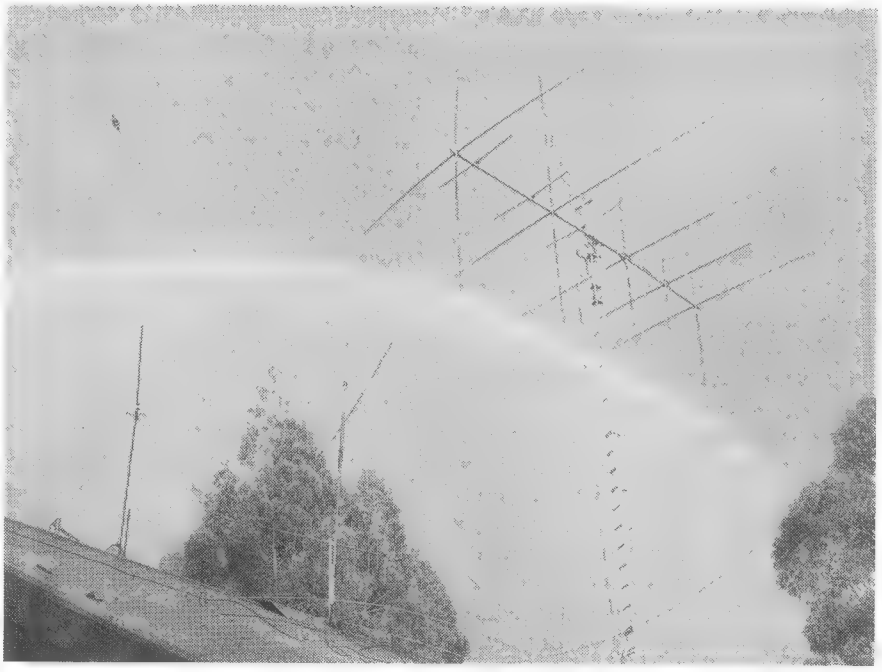
Paul A35RK returned to Tonga mid December and immediately made an impact with contacts into VK and ZL on most days. This season openings to Paul seemed to be longer in length with signals generally stronger in strength than last season with many good openings occurring to the southern states, VK3, 5 and 7. Paul completed 145 contacts into VK/ZL on the 30/31 December which included 8 CW and 8 SSB contacts into VK6 on the 31st December. Most of the VK6 contacts were over 7000 km with reports of 5/3 - a remarkable feat.

Another station to add interest to this summer's E season has been Norm P29NB. Norm is located at Ukarumpa, in the Eastern Highland Province of Papua New Guinea, Lat.: S 06° 20.295' (20' 17.8"); Long.: E 145° 52.835' (50' 50.3"); Grid Locator QI23wp and at an altitude of 1550 metres/5100' ASL, where Norm says the weather is beautiful most of the time.

Norm's station setup is as follows:

Radio: Current HF/6 Transceiver is an Icom IC-756ProII, usually running 100 Watts.

Antenna: The 6 metre antenna is a 6-element Quagi, interlaced on the boom with an HF Quad antenna. The REF, DE and DIR1 are quad-type loops, and DIR2, DIR3 and DIR4 are all Yagi type elements, mounted on a 33 foot boom at 55 feet above the ground on a crank up tower. The HF Quad has 5 elements on 10 and 12 metres, and 4 elements on 15, 17 and 20 metres.



Norm's antennas

Computer: Older Dell laptop that runs DX4WIN logging software, DigiPan v.2.0, CT for contesting, PROBE v7.0 for controlling a Radio Shack Pro-2042 scanner, and misc. other radio related programs.

Norm first worked into northern VK4 on the 8th November working 6 x VK4s. Further openings occurred on:

23rd November where Norm worked Dave VK1DJA,

6th December 10 xVK2s, VK3s OT, LY and MTV and VK4s BKP, BEG and SIX,

14th December, VK2s BHO and ZQ, 14 x VK3s, 11 xVK4s, 9 x VK5s and VK8s MS and RR.

Good work Norm.

On 19th December, Gary VK4ABW in Townsville heard 9V1UV calling CQ and completed a contact with Selva in Singapore at 57. Mark VK8MS in Darwin then worked Selva at 51.

Conditions in November/December have been very good from all areas of VK and ZL with many stations being active and it was possible to work all states of VK on many days. It is hoped the good conditions carry on into January.

Please send any 6 m information to Brian VK5BC at bcleland@picknowl.com.au.

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Hamads

FOR SALE NSW

•C band satellite dish: HILLS 12 foot (3.98 m) fibreglass. Dismantled and in good condition, assembly instructions incl. $100.00 Bob VK2XRF Ph 0422 056 693 - pick up from Ettalong, NSW

•KENWOOD TL-922 linear amplifier, used briefly then placed in storage. This unit looks like new. Complete in original carton, instruction book, etc. No marks, scratches, smoke free atmosphere. $1800. Buyer picks up Sydney. John VK2AYC.02 9583.2056 or 0419 421 116.

WANTED NSW

•BEAM ANTENNA 14/21/2Ave, Willoughby East NSW 2068 phone 02 9958 1114

FOR SALE VIC

•ICOM IC-701PS. A powerful power supply 13.8 volts. Has a fault in the voltage regulator circuit but otherwise OK. Previously advertised for $140 but now selling for $100 as I have moved to a retirement village and no longer have the gear to fix it or use it. VK3BV. Phone 03 5975 0306. Mornington Vic. Will negotiate re transport costs.

WANTED VIC

•Squelch pot for KENWOOD TR-751A 2 m multimode transceiver. Colin VK3GMR 03 9707 3373 or colin@eptech.com.au

FOR SALE QLD

•GME TX-830 HF transceiver 4 watts output, 10 metres, $95. HIDAKA Magnetic Base & HIDAKA 2 metre antenna, Japanese quality, new in box $65. KENWOOD TK-3207 amateur band UHF handheld, as new condition, with matching KSC-31 drop-in AC charger.$95. ELECTRO-VOICE (USA) 600 Dynamic CARDIOID microphone $75. TRANSWEST (Aussie made) regulated 5 amp 13.8 V DC power supply $55. GALBRAITH keyer, made in NZ $75. Contact: Andy Parniczky VK4FBI QTHR vk4fbi@yahoo.com.au or mobile: 0405 089 161

WANTED QLD

•2008 ARRL Handbook CD-ROM price inc postage. Gwen VK4CB QTHR Phone 07 3202 7137

•YAESU model FT-101ZD or FT-101Z transceiver with circuit or owner's manual if possible. No lightning damage. Also copy and circuit of owner's handbook and circuit of possible AMECO model PT-3 preselector. Also copy manual circuit DAIWA automatic antenna tuner model CNA-1001A. Will cover cost. Brad Booth 48 Gregory St Cardwell 4849. bradtimmy@hotmail.com

FOR SALE SA

•VK5JST Antenna Analyser kits (see AR article May 2006) Test your skills and build yourself an extremely useful item for your shack, and improve your HF antenna efficiency. For more details see www.scarc.org.au; contact SCARC PO Box 333 Morphett Vale SA 5162, or email: kits@scarc.org.au

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- Submit by **email (MUCH preferred)** or on the **form on the reverse of your current Amateur Radio address flysheet**. Please print carefully and clearly, use upper AND lower case.
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Broadcast details

VK1	VK1WIA:	Sunday 0900 local on the Mt Ginini repeaters 146.950 and 438.050 MHz. The UHF repeater requires 123 Hz access tone and is linked to the Goulburn repeater.
VK2	VK2WI:	Sunday 1000 and 1930 local, on 1.845, 3.595, 7.146, 10.125, 14.170, 28.320, 52.525, 145.6000, 147,000, 438.525 and 1273.500 MHz. Also 5.425 MHz USB in the morning.. Plus provincial relays both sessions and country relays in the morning via local repeaters. VK1WIA news is included in the morning.
VK3	VK1WIA:	Sunday 10:30 am and 8 pm Local Time. Amateur Radio Victoria VK3BWI B/cast Network: 3.615, 7.158, 10.130,147.250 VK3RMM Mt Macedon, 146.700 VK3RML Mt Dandenong, 147.225 VK3RWG Mt Baw Baw, 438.075 VK3RMU Mt St Leonard.
VK4	VK1WIA:	Sunday 0900 local via HF and major VHF/UHF repeaters.
VK5	VK5WI:	Sunday 0900 local, on 1.843, 3.550, 7.140, 28.470, 53.100 AM, 146.900 (SE), 146.925 (CN), 147.000 and 439.975
VK6	VK6WIA:	Sunday 0900 local, on 1.865, 3.582, 7.075, 10.125, 14.116, 14.175, 21.185, 29.120, 50.150, 146.700 and 438.525 MHz. Country relays on 3.582 MHz and major repeaters. Repeated Sunday, 1900 local, on 1.865, 3.565, 146.700 and 438.525 MHz. Country relays on major repeaters. Also in 'Realaudio' format from the VK6WIA website.
VK7	VK7WI:	Sunday 0900 local, on 1.840 AM and 3.570 MHz and on major repeaters. VK7 regional news follows at 0930 local, on 7.090 and 14.130 MHZ, and on major repeaters.
VK8		Sunday 0900 local, on 3.555, 7.050, 10.130 and 146.900 MHz.

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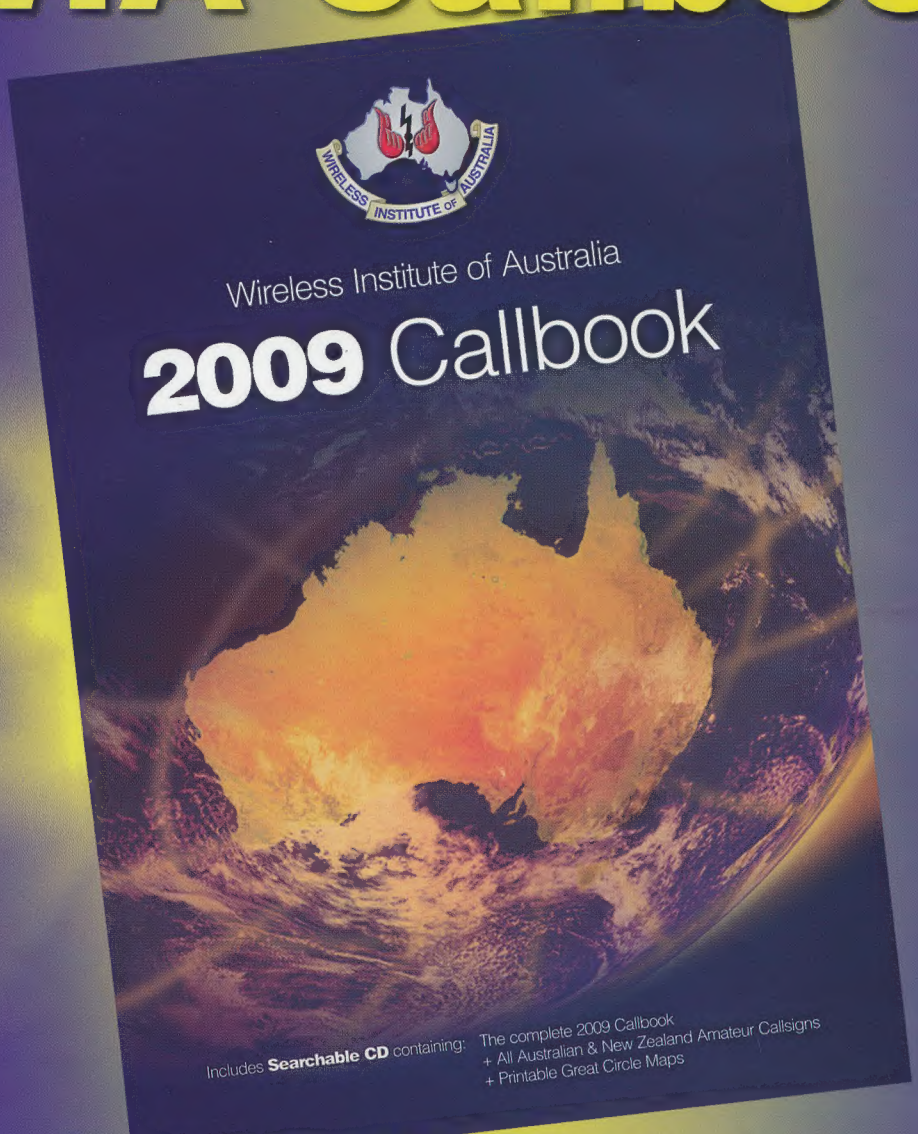

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